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Your Public Lands

Winter 1982

BLM's Eastern States Office

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

U.S. Department of the Interior. As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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Volume 32
Number 1

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The Eastern States Office

When the United States of America was young, its citizens' soaring expectations were based, in part, on the view to the West—first to the lands just beyond the Appalachian Mountains, later to the great plains west of the Mississippi River, and finally beyond the Rocky Mountains.

There lay the future: hundreds of thousands of square miles—no one knew just how many—of unsurveyed and largely unexplored lands. Land for cities, for farms. Land for homes.

At first, most of it was U.S. Government property. It was the "public domain". But soon enough, the Government began selling or granting these lands through the General Land Office, to veterans, railroad companies, State governments, or other recipients. The first of the public domain lands to be opened to settlement were those in the old Northwest Territory—now the States of Ohio, Indiana, Illinois, Michigan and Wisconsin. Soon afterwards "public domain" lands in territories, which later became the States of Alabama, Mississippi, Louisiana and Florida, were sold. Finally, settlement moved across the Mississippi River into territories which are now the States of Arkansas, Missouri, Iowa and Minnesota. These 13 public domain States and eighteen other States east of the Mississippi River are included in the present-day jurisdiction of BLM's Eastern States Office.

In these States, public lands amounting to 2.8 million acres were withdrawn from sale or conveyance because the Congress had some

Stephen Altman

BLM-administered island in a Wisconsin river. ESO administers 2,323 islands in the lake States of Minnesota, Michigan, and Wisconsin.

special purpose in mind: national forests, military reservations, Army Corps of Engineers projects and Coast Guard light stations.

There remain about 56,000 acres for which no special purpose was found, as well as almost 2,800 islands scattered in numerous rivers and lakes and along the coast, and an undetermined quantity of land that was omitted from the original surveys. All of these are now the responsibility of the Eastern States Office.

Compared with BLM responsibilities in the West, the amount of surface to be managed by the Eastern States Offices isn't much; yet the task is substantial. Nearly ignored for decades, the surface under BLM jurisdiction in the East is scattered over eleven States. It comes in parcels ranging from thousands of acres to just a few tenths of an acre, varying in character from the peat bogs of northern Minnesota to the beaches of the Florida coast.

The public room at ESO, where researchers pore over leasing and title records.

That's just the beginning. The Bureau, of course, doesn't just manage land, but most Federally-owned minerals as well—regardless of who owns or manages the overlying surface, and regardless of whether the minerals were part of the original public domain, or were acquired later through purchase or exchange.

All this has a special significance for the Eastern States Office. It means that responsibility for surface resources is dwarfed by its responsibilities for minerals resources. It means responsibilities for approximately 25 million acres of Federal mineral rights, under surface owned or managed by others, versus some 56,000 acres owned by the Federal Government.

The heart of the mission at Eastern States is to manage a large and valuable Federal minerals estate, in a productive and environmentally sound manner, and to do this in areas where the potential for energy and minerals development has only just begun to be recognized. The office is actively engaged in leasing Federal coal resources, and heavily involved in the leasing of oil and gas. The Eastern States Office received over 4,600 new oil and gas offers in FY 1981.

The January 1981 Ft. Chaffee oil and gas lease sale was the highest gross bonus bid onshore competitive oil and gas lease sale in the history of BLM. That sale was testimony to the potential value of the Federally-owned minerals to be found in Eastern States' area of jurisdiction. These are resources on which the Bureau has just begun to focus active and intensive resource management.

At Eastern States' headquarters in Alexandria, Virginia, and at field offices in Tuscaloosa, Alabama and Duluth, Minnesota, about 180 staff members pursue the many interconnected duties that resource management entails. Long-term efforts are underway to inventory surface and mineral resources under ESO jurisdiction. Maps are planned or in production—under the Federal Minerals Management Mapping Program—to portray the presence and nature of our ownership. Planning areas have been delineated, and each one thoroughly studied—the different resource values identified and weighed, the possible impacts of management decisions evaluated and balanced against one another. State-wide lands and minerals planning has been completed or is underway in Alabama, Florida, Michigan, Wisconsin and Minnesota.

In Minnesota, where the majority of its surface acreage is located, the Eastern States Office has begun to tackle the mandate from BLM headquarters to find opportunities to dispose of its far-flung surface holdings. The staff believes the best course to take is either offer certain

tracts for public sale or to find other, more appropriate managers for many of these scattered tracts and their resource values. This is the case in Minnesota, and that decision fits in well with the policy for all surface holdings in the East. What remains to be seen is just how willing other Federal and State land managing agencies are to take on that job. In Minnesota, Eastern States Office has found that several Federal and State agencies were willing.

Not surprisingly, it has been necessary to take special steps to protect far-flung eastern public land resources from unauthorized use. The long absence of Federal minerals management capabilities in the East, and the fact that much of the ownership occurs under privately-owned surface and in distant locations, has led to problems of unauthorized removal of Federal minerals. Within the last three years, the office has built both a mineral resource management staff to implement active minerals programs and a resource protection staff to investigate—and often assist in the prosecution of—persons or firms who have removed Federal minerals without authorization.

Modern technology has come into play. It is impossible to check all of the scattered mineral holdings in person or on a regular basis. For this reason the staff is making use of remote sensing imagery. From these computer-enhanced images surface disturbance can be detected. That information is overlayed with mineral ownership data. If it appears that unauthorized mining has taken place, on-the-ground inspections can then be initiated. The technique is a very promising addition to other resource protection methods.

Another resource at Eastern States Office merits protection. Over five million individual—and irreplaceable—land title records are filed there. They cover the 13 public lands States under Eastern States Office jurisdiction: Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Mississippi, Ohio, and Wisconsin.

Cadastral survey notes and plats, government patents and other documents dating back to the original public lands surveys of the late 1700s—each is a small piece of history. But even more important, the records are crucial to tracing and confirming title to land and mineral resources. Each year, in fact, the office supplies about 50,000 copies of various records upon request from the public.

The problem is that many of the records have deteriorated over time and with use. Therefore, a long-term records restoration project is underway. This project is aimed at restoring damaged and faded records, and microfilming and cataloguing others to make them readily accessible through microfiche.

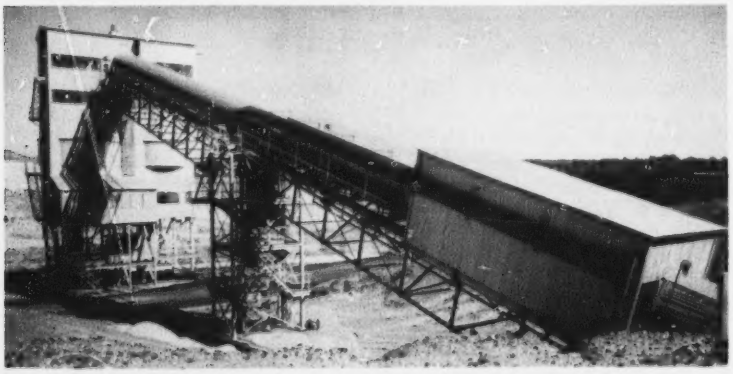
Land survey information, much as it was almost 200 years ago, is still being produced or updated. The Eastern States Office has cadastral survey crews working full-time in three national forests—the Mark Twain in Missouri, the Ocala in Florida, and the Ozark in Arkansas. Other survey crews move north or south as different projects require and seasons of the year allow. These crews resurvey and remark the boundaries of the public lands, and perform a function which, by law, only the BLM can do—that is to define precisely and legally which lands are the public lands of the United States. This is a responsibility and function of the U.S. Government which pre-dates the Constitution—back to 1785—and is still important today.

The Bureau as a whole has responsibility for the thousands of wild horses and burros that roam the public lands in the far western States. They are the descendants of horses and burros brought west more than a century ago—by miners, homesteaders, the U.S. Army—and now are protected by law.

For their benefit, and to protect the range itself, BLM rounds up excess wild horses and burros and finds good homes for them around the country. The Eastern States Office operates an adoption center in Tennessee, and plans to open another in Pennsylvania this spring. Occasionally temporary facilities are established to bring the animals directly into communities around the East.

One reason wild horses and burros found favor under the law is that they comprise a kind of symbol. They're a reminder of America's past—of the attempts Americans once made to live self-sufficiently in a new land—to discover and make use of the abundant natural wealth to be found there. That effort is really still continuing. We are more aware than Americans once were of the limits on that natural abundance. We are also better equipped to make use of our natural resources, and more convinced of the need to use them properly. BLM is part of that effort, and so is the Eastern States Office.

An underground coal operation in north-central Alabama, where Federal coal leasing resumed this year.



Stephen Altman is a Public Information Specialist in BLM's Eastern States Office, Alexandria, Virginia

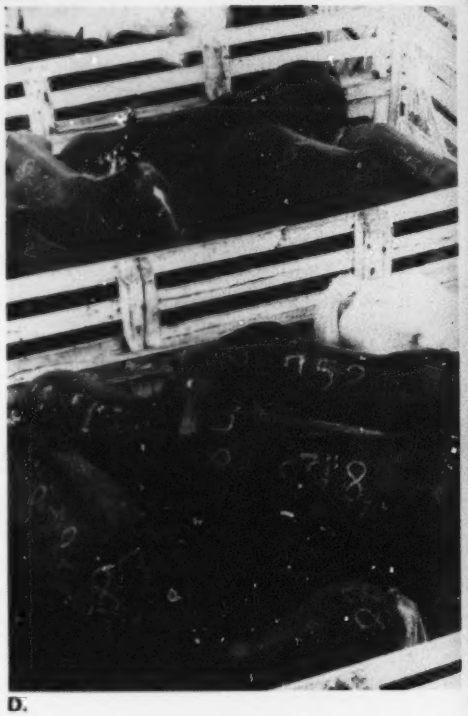
An Answer for the Adopt-A-Horse Program in The East

By Judith Lent

A.

B.

C.



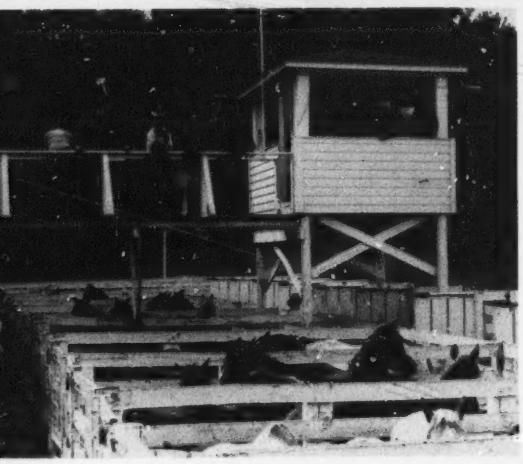
D.

- **A.** *A shaggy burro patiently awaits new owner.*
- **B.** *Country singer, Crystal Gayle last year did several television spots for BLM to help make the public aware of the availability of wild horses and burros.*
- **C.** *These docile, friendly, once-wild burros make excellent pets and are available through the adop tion program.*
- **D.** *The animals have temporary numbers on them for easy identification by potential adopters.*

Just outside of Cross Plains, Tennessee, a tiny town 30 miles north of Nashville, is the Bureau of Land Management's first Wild Horse and Burro Distribution Center in the East. It was established in 1979 as a sort of "halfway house" for the wild horses and burros that BLM hauls in every week from western public rangelands. The animals spend only a couple of days at Cross Plains, then they are "adopted" by their new guardians and continue their journey to new homes as far north as Maine and as far south as Florida.

The process is all a part of BLM's national Adopt-a-Horse and Burro Program, originally established under the terms of the Wild and Free-Roaming Horse and Burro Act of 1971 as a partial solution to the problem of over-population among wild horse and burro herds on public rangelands in 10 Western States. There, the animals share the land with native wildlife, as well as sheep and cattle, and sometimes their numbers outstrip the ability of the range to support them. The most humane approach for maintaining an ecological balance between the animals and their habitat is for BLM to round up the excess wild horses and burros and make them available for adoption by private individuals.

At first, folks were driving to the Far West to get their new pets—to places like Rock Springs, Wyoming; Reno, Nevada; or Burns, Oregon. But as news of the adoption program reached new parts of the country, more and more people expressed their interest in adopting the excess animals. As a result, the Tennessee center was established. It's a family operation, run for BLM by Randall Carr and his wife Paula, along with his sister and brother-in-law, Linda and James Buntin. They built the corrals and a visitor facility; and now the center has become a showplace for BLM



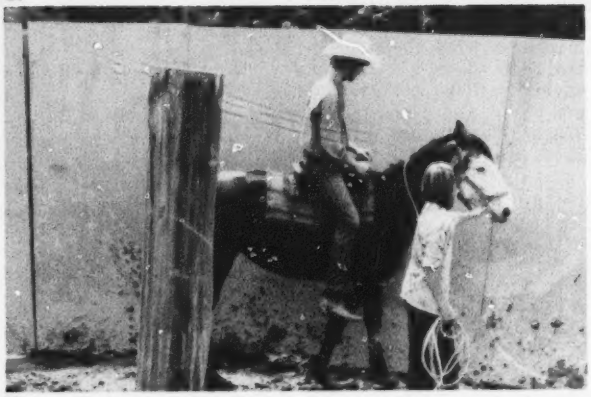
E. *Burros cautiously step from the transportation truck into a holding corral.*

F. *From the raised viewing area, potential adopters can view many animals at one time.*

G. *Although many of the horses are shaggy from lack of care when they reach adoption centers, with a little effort they can be transformed into beautiful animals.*

H. *A once-wild horse grows accustomed to carrying a rider.*

G.

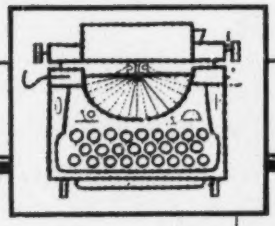


H.

in the East. At an average rate of 40 to 50 animals per week, the Carr's have now adopted nearly 3,000 wild horses and burros through the center. In addition, four special "satellite" temporary centers in areas of high demand have facilitated the placement of 462 more animals in 1981 alone. The centers have been so successful, in fact, that plans are now in the works to open a new wild horse and burro distribution center in Pennsylvania in the Spring of 1982.

Just as the overall Adopt-a-Horse program is a partial solution to coping with excess wild horses and burros in the West; the eastern distribution operations are a partial solution for assuring that the program works. BLM's goal is to assure that a viable adoption program continues; and easterners, many still learning about the program for the first time—are continuing to help make it so. For those who would like more information, write: Adopt-a-Horse, Consumer Information Center, Pueblo, Colorado 81009.

Judith Lent is Chief, Public Affairs BLM Eastern States Office, Alexandria, Virginia



News Highlights

Open Space Program Protected

At the request of the City of Phoenix, the Interior Department has moved to protect some 2,537 acres within that city's Mountain Preserve open space area.

The protection is in the form of a Public Land Order, signed in July that withdraws the land from operation of the mining laws. The action will foster the protection of both a rare natural resource and the city's considerable investment by preventing prospecting and location of mining claims.

Surface rights to the land passed from Federal ownership years ago under the Stockraising Homestead Act. Mineral rights, however, remain in Federal ownership, making the withdrawal order necessary to prevent surface disturbances.

The preserve is an undeveloped open space area established in 1972 by the City of Phoenix. The lands are located on or near peaks of the Phoenix mountains. Approximately 1,200 acres are presently used for recreation and open space purposes.

The U.S. Geological Survey has reported that the lands covered by the withdrawal order are without value for minerals covered by the mineral leasing laws.

Western Communities Seek 600,000 Acres of Federal Land

Communities in 11 western States have indicated they would like an estimated 600,000 acres of Federal lands transferred to them for uses such as education, health and expansion.

These requests are in response to a letter from Secretary of the Interior James Watt, asking communities of the West to identify public lands which could be used to meet State and community needs.

States which have responded, number of community requests and total acreage desired include the following: Arizona(28 community requests), 34,600 acres; Colorado (14 requests), 39,000 acres; Idaho (71), 6,800 acres; Montana(28), 8,500 acres, Nevada(22), 321,000 acres; New Mexico(20), 18,700 acres; Oregon(38), 8,000 acres; South Dakota(7), 1,000 acres; Utah(46), 88,000 acres; Washington(2), 15 acres and Wyoming(59), 45,000 acres.

BLM will coordinate with State Governors in responding to the requests.

BLM State Directors have been working with the States and communities as to how BLM-administered public lands may be transferred under the Recreation and Public Purposes Act and other land laws. For example 40 acres for a waste water treatment facility were sold by BLM to Bend, Oregon for $2.50 an acre. The Idaho State Office of BLM is working to provide school acreage for the Challis School District. Other Idaho community needs are being met through issuance of temporary use permits. Action on lands for airport expansion is under way with the cooperation of the Federal Aviation Administration for Las Cruces, New Mexico. Half the State of Colorado requests are to be processed under Recreation and Public Purposes Act leases in the next few months.

In some cases, Federal lands identified for transfer are under the administration of agencies other than BLM. Those requests are being referred to the appropriate agency to determine if the community requests can be granted.

Alaska Gas Pipeline Agreement Signed

The State of Alaska and the Department of the Interior have entered into a cooperative agreement for managing the lands and resources for 740 miles within the State along the corridor of the planned Alaska Natural Gas Transportation System.

Signing the agreement in August were Interior Secretary James Watt and Alaska's Lieutenant Governor Terry Miller, who jointly described it as an important step in Federal-State "good neighbor" relations.

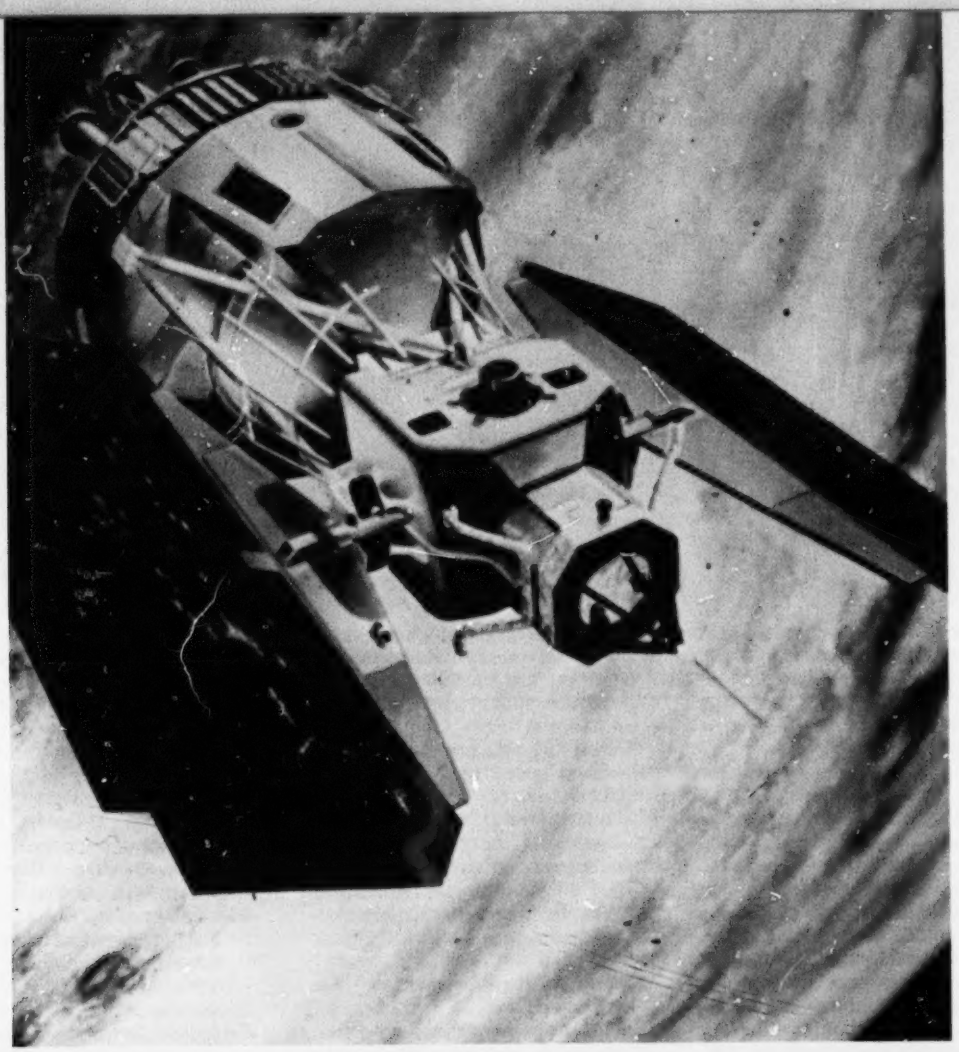
The privately financed multi-billion-dollar project will pump natural gas from the giant Prudhoe Bay oil and gas field, on Alaska's Arctic Sea coast southward along several routes to be fed into existing pipelines.

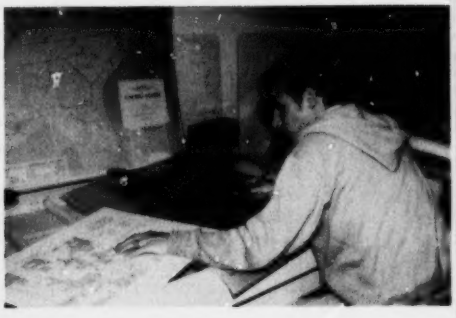
Construction is under way on both the eastern and western legs within the lower 48 States but has not yet begun within Alaska.

The new cooperative agreement establishes a procedure to coordinate the issuance of permits, easements, rights-of-way and other authorizations needed in connection with the project. Some 430 miles of the pipeline within Alaska will cross Federally-owned lands, and slightly more than 330 miles will cross State, Native, and privately-owned lands. The Interior agencies primarily concerned are the Bureau of Land Management and the U.S. Fish and Wildlife Service.

Oil and Leases to be Offered in Alaska

Tentative selection of 59 parcels of land, totaling approximately 1.5 million acres in the National Petroleum Reserve in Alaska (NPR-A) has been made for offering in an oil and gas lease sale in Dec. This will be the first onshore oil and gas lease offering in the NPR-A. A second offering within NPR-A will be held in the Spring of 1982.





Satellite Monitors Trespass of Federal Minerals

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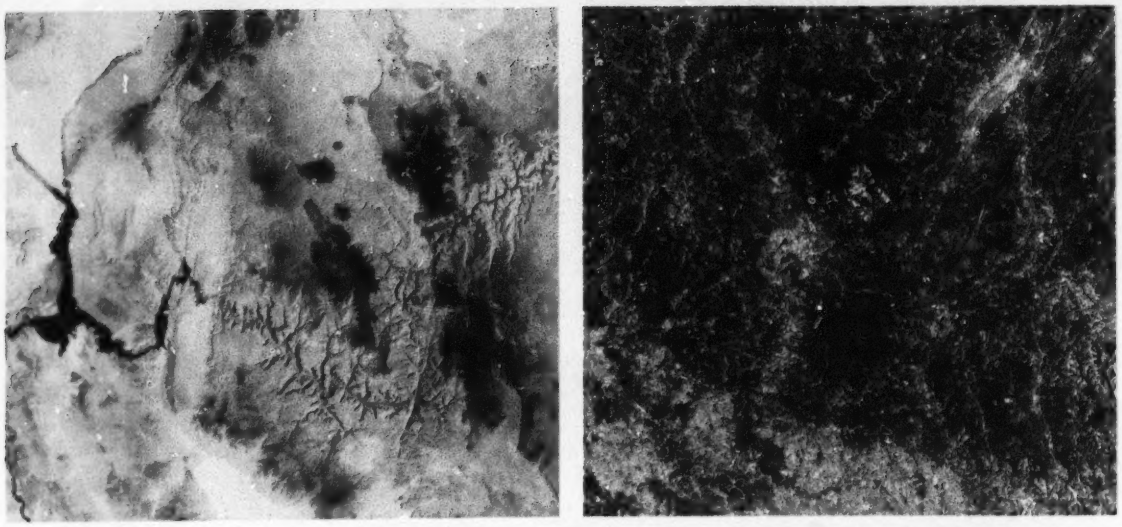


A Landsat image such as this one is used to detect change or surface disturbance. The darker grey is vegetation, black is water. Where there had been surface disturbance, the vegetation pattern would show change on a Landsat image from previous images. When a disturbance is detected, aerial photographs are used to zero in on an area.

By Ray Arndt

The Eastern States Office is responsible for the administration of an estimated 24.4 million acres of Federally-owned minerals. There are areas of valuable Federal mineral commodities in at least 20 eastern States stretching from Minnesota to Florida. Significant reserves of oil and gas, coal, phosphate, lead, copper, nickel and other minerals exist as part of the Federal mineral estate in the eastern United States. Federal minerals in the East provide the country with significant amounts of energy and non-energy mineral production and net millions of dollars in royalties for the Federal treasury. Unauthorized removal of these minerals (trespass) has increasingly become a problem.

It was not until 1974, when the Eastern States Office was created, that the Bureau turned its attention to the vast resources of minerals in the East. Within a few months after the Tuscaloosa Project Office was established in north-central Alabama, trespass of Federal coal was discovered. The area is a rich coal producer. It contains the Warrior Coal Field, an important source of fuel for the Birmingham steel industry since the early 1900s. In 1977 BLM began to give the Alabama coal trespass problem priority attention.

BLM prepared an analysis of the problem and determined needed personnel and funding. The result was the development of a law enforcement staff, a trespass coordinator, and a trespass detection staff at the Eastern States Office. An all-out trespass detection inventory effort was begun. Follow-up field investigation work in the Bureau's north-central Alabama planning office confirmed the existence of 29 cases of surface-mined coal trespass. The estimated tonnage removed was more than 700,000 short tons with a value at the time of mining of $10 million.

Early in 1979, the theft of Alabama coal exploded into a major issue for BLM. The problem was aired nationwide on a major television program. This coverage was followed with investigations by two Congressional subcommittees and the Government Accounting Office. One subcommittee hearing was held in Atlanta, Georgia and another in Washington, D.C. After considerable study of the problem, BLM geared up to facilitate the settlement of the Alabama coal trespass cases and to accelerate searching of the rest of the Federal mineral estate for illegal extraction.

The initial goal of the coal lands inventory program was to search the approximately 200,000 acres of Federal coal located under State or private surface ownership. Although the coal lands had high priority, the inventory program was soon expanded to inventory of other valuable minerals such as phosphate in Florida. The program consists of (1) mapping the location of the high potential Federal coal ownership, (2) acquiring aerial photography and searching it for evidence of unauthorized minerals removal and (3) surveying high potential Federal coal ownership in regions of active minerals development through the use of satellite data.

Maps of the Federal mineral ownership are an essential prerequisite to the actual detection work. Because there is such a large mapping workload to be completed in the eastern United States, the inventory staff assisted the mapping effort

by preparing ownership maps for areas of concern not previously mapped. Some 100,000 acres of targeted coal ownership have been mapped as have more than 20,000 acres of Florida phosphate ownership.

Generally, existing aerial photography is purchased rather than having photography flown because of the expense of the latter. The maps are used by inventory specialists to locate the Federal mineral ownership on the photographs. Areas within and adjacent to the boundaries are then searched for possible evidence of surface disturbances related to minerals extraction. This work has been effective in locating sites for field verification. An additional benefit derived from this work is the recording of general surface resource and status information on each aerial photo interpreted. To avoid future minerals trespass problems, such as the one encountered in northcentral Alabama, one requirement was frequent searching of mineral ownership having high potential in regions where mineral extraction operations are present. The requirement of the surveillance system which the Eastern States Office was looking for was one of frequent searching (approximately once a year) using an inexpensive technique. Experience with the conventional aerial photo interpretation inventory program made it apparent the BLM could not afford to purchase the necessary aerial photography on an annual basis. Manual interpretation work would also be too time consuming and costly.

In the BLM testimony at the Congressional subcommittee hearing in Atlanta, Georgia it was stated that the Eastern States Office would consider the use of Landsat imagery. At that time, the staff knew very little about the use of Landsat data except that it covered large areas in a single scene and that it is available for the same areas at frequent intervals.

A remote sensing course for Eastern States Office personnel was contracted and planning for a pilot project was then begun. A two-year pilot study was formalized. The results of the first stage were encouraging and the work is being given operational status this year, one year ahead of schedule.

Now, what is Landsat digital imagery and how is BLM able to use it to monitor mineral activities? The Landsat, or Land Satellite, became operational with the launching of Landsat I in 1972.

At present Landsat II is fully operational and Landsat III is partially operational. These satellites orbit 570 miles above the earth and record digital data over any given spot on the planet every 18 days. Each frame or scene covers an area 115 miles square and is composed of 7,581,600 picture elements, or pixels, slightly larger than one acre. Although the Landsat sensors provide only a very course resolution, they can differentiate 128 shades of grey and can sense the earth's surface in four separate ranges or bands of light. Two of these bands are in the infrared which is invisible to the human eye. The Landsat sensors record and transmit this data at the rate of one scene every 25 seconds. This information is recorded onto computer tapes. Through various photographic simulation processes they are converted into a false color infrared photograph-like image for each scene.

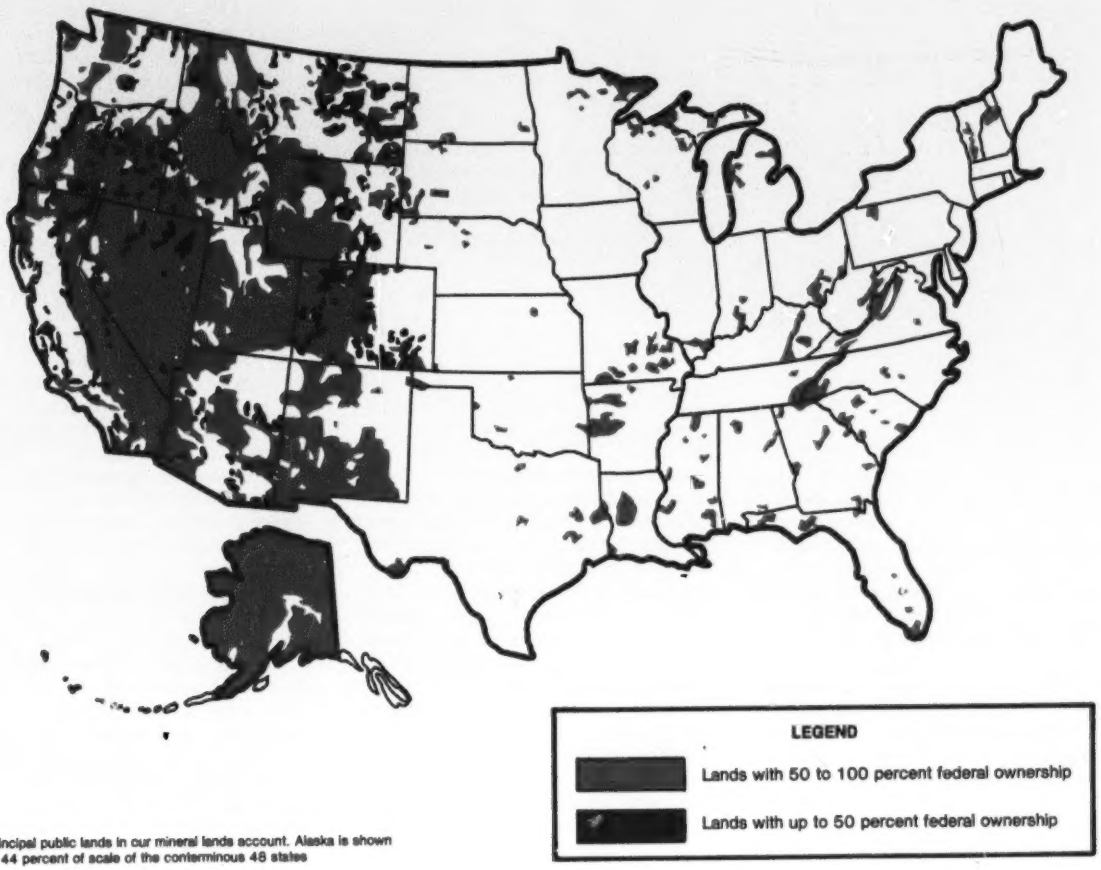
Although these scene images have many uses, the technique which the Eastern States Office is using for its program utilizes the digital data and a specifically designed computer processing system known as IDIMS. The IDIMS is housed in the Denver Service Center Remote Sensing Branch and is used for a variety of BLM resource program projects. The Eastern States' program is one of monitoring or detecting change.

The technique used, very simply, consists of using two or three scenes of the same area taken at different calendar dates and looking for mining (surface) disturbance related change. Because the satellite sensors are highly sensitive to changes in color tone, the difference between the appearance of a fully-vegetated tract of land and one which is stripped of vegetation is striking on Landsat data. Various techniques including albedo difference and band-rationing have been successfully used to detect change. The first step in the process involves registering the data of one Landsat scene to a second scene in the IDIMS. This results in matching the one acre picture elements from each scene to the same locations on the ground. Once this is done, a change mask, or overlay, is prepared showing where differences in color tones exist from the time of the first scene to the time of the second scene. Small changes in tone can occur for many reasons. These may not indicate any real change and certainly not such a dramatic change as surface mining. The next step is to threshold or, by using an area of known change, eliminate the smaller tone changes not associated with mining from the change overlay. This work is also done on the IDIMS. Smaller changes are subtracted out and, through trial and error, show changes which correspond to those the staff members know to be associated with mining activity.

Once the thresholding is complete a change overlay printout can be made. From this, a clear transparency is produced. The transparency is overlayed on the ownership map(s) and areas of significant change on or near Federal minerals are identified.

The next step is to verify the changes and their causes. If recent aerial photography is available, it is cost efficient to make the first check from these. Field verification is the final step for those sites where unauthorized mining appears to be present.

The scenes in the eastern U.S. for which periodic monitoring is desirable will be identified within the next few years. Some areas will be checked and dropped from further consideration in the near future due to lack of potential problems. Other scenes, such as the one covering the Northcentral Alabama Resource Area, will be added to a list of scenes identified for periodic



Principal public lands in our mineral lands account. Alaska is shown at 44 percent of scale of the conterminous 48 states

monitoring. In this way the Landsat associated monitoring workload will be defined. The process is mostly automated with the exception of the mapping and follow-up verification work. Supplemental mapping will continue to be a major requirement for the next few years. Beyond that time the verification workload will continue to be the principal limiting factor on how many scenes can be searched each year.

Using Landsat to monitor mineral lands has Bureauwide applications. The Federal Government owns partial or complete mineral rights on nearly 800 million acres. The bulk of this acreage is located in the twelve western States, including Alaska. The technique can be used on any of these areas where there is a need to monitor minerals activities and where BLM ground presence is not sufficient to handle it as part of day-to-day activities. Approximately 63 million of these acres, an area equal in size to the State of Wyoming, are located under non-Federal surface (i.e., State or private). In most instances these areas do not have good ground surveillance and should be considered as targets for this technique.

With the help of Landsat, BLM will have the capability to eliminate the problem of Federal minerals trespass.

Ray Arndt is an Inventory Specialist in BLM's Office of Planning and Environmental Coordination, Washington, D.C.

Federal Mineral Ownership in the East -- A "Split" Estate

By Roger L. Hildebeidel

While BLM's Eastern States Office is responsible for relatively little surface acreage in its area of jurisdiction, that area does include some 25 million acres of potentially developable Federal mineral resources. The importance of domestic energy and non-energy minerals is growing. In recent years BLM has begun to recognize the potential value of Federally-owned mineral resources in the East, along with the need for their balanced and effective management.

Federal mineral ownership in the eastern States generally occurs on lands administered by other Federal or State agencies or owned by private individuals. In many cases, Federal mineral ownership—especially on private lands—occurs in small, scattered tracts and in areas where the public is unaware of the presence of Federal mineral ownership.

A Clear Picture of a Complex Situation

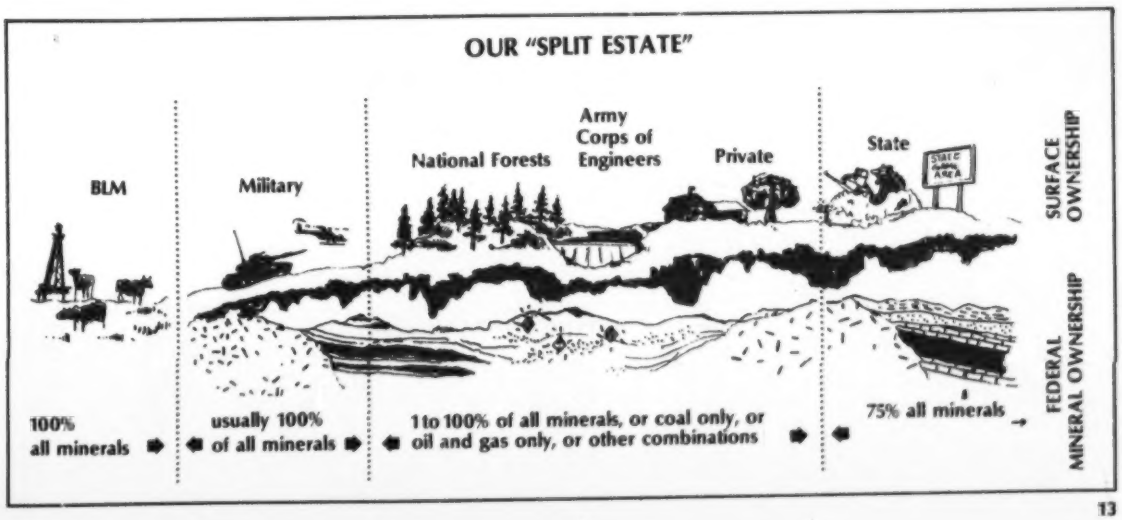
The nature of the surface overlying Federally-owned minerals will, in part, determine which laws and regulations govern their management. Surface ownership over Federal minerals falls into three basic categories:

Public Domain Lands—lands that were added to the United States during westward expansion and are still owned by the Federal Government. In the East, most of the remaining public domain lands are now part of certain national forests.

Acquired Lands—lands acquired by the Federal Government through purchase, condemnation, gift or exchange, from other public or private ownership—generally for national forests, parks, wildlife refuges, military sites, or other Federal purposes.

Federal Minerals under Private or State Surface—lands where all or part of the mineral ownership was reserved to the United States when the surface was transferred to other ownership. These could be in original public domain land patents or in transactions involving transfers of Federally acquired lands. These reserved minerals are managed by BLM according to the provisions of applicable Federal laws. They are separate from the ownership of the surface estate. These are often called "split estate" lands.

The varieties of surface and subsurface mineral ownership can lead to a multitude of management situations. In a given area, for instance,



the surface of the land may be owned by a private individual, while all or certain types of minerals (such as coal only or a combination of coal, oil and gas) underneath the surface are owned by the Federal Government, and managed by the Bureau of Land Management. Or the surface may be owned by a State government with only the underlying coal reserved to the United States. Or the surface may be owned by the Federal Government and managed by the National Park Service, with the underlying minerals also Federally-owned but closed by law to development. The possible variations are almost infinite.

There are also numerous situations in which the surface may be owned by the Federal Government but the underlying minerals are privately-owned. This has occurred most frequently in the eastern national forests and Corps of Engineers civil work projects when Federal agents purchased only the surface, and title to the minerals was retained by the seller or had already been severed from surface ownership to a third party. The full spectrum of such possibilities is depicted in the accompanying illustration.

Finally, another complication arises in eastern areas on acquired lands. In cases where all minerals were acquired, the minerals are generally characterized as "hardrock" minerals—such as lead, copper, nickel, gold and silver—which are also subject to leasing by the Federal Government. Unlike many areas in the West, where hardrock minerals are locatable under the General Mining Law of 1872, a miner cannot stake a claim for these minerals on any acquired lands; or on eastern public domain lands except in the States of Arkansas, Louisiana, Mississippi and Florida.

Distribution of Surface Acreage Under Eastern States Jurisdiction

Alabama	2,618
Arkansas	1,860
Florida	2,330
Illinois	33
Louisiana	3,854
Michigan	690
Minnesota	41,974
Mississippi	1,617
Missouri	400
Ohio	120
Wisconsin	337
Total	**55,833**

BLM responsibilities for minerals leasing in the East run the gamut: for oil and gas, both competitively and noncompetitively, in the Gulf States and on the Eastern Overthrust Belt; coal in Alabama, Kentucky, Virginia, Ohio, Pennsylvania and other States; phosphate in Florida; and hardrock minerals in Minnesota, Missouri and North Carolina. The responsibilities include recording and examining mining claims in Arkansas and reviewing drill plans in Louisiana or Mississippi. The Eastern States Office also conducts the bi-monthly simultaneous drawings for oil and gas leases—commonly called the Federal oil and gas lottery—for parcels within the 31 eastern States.

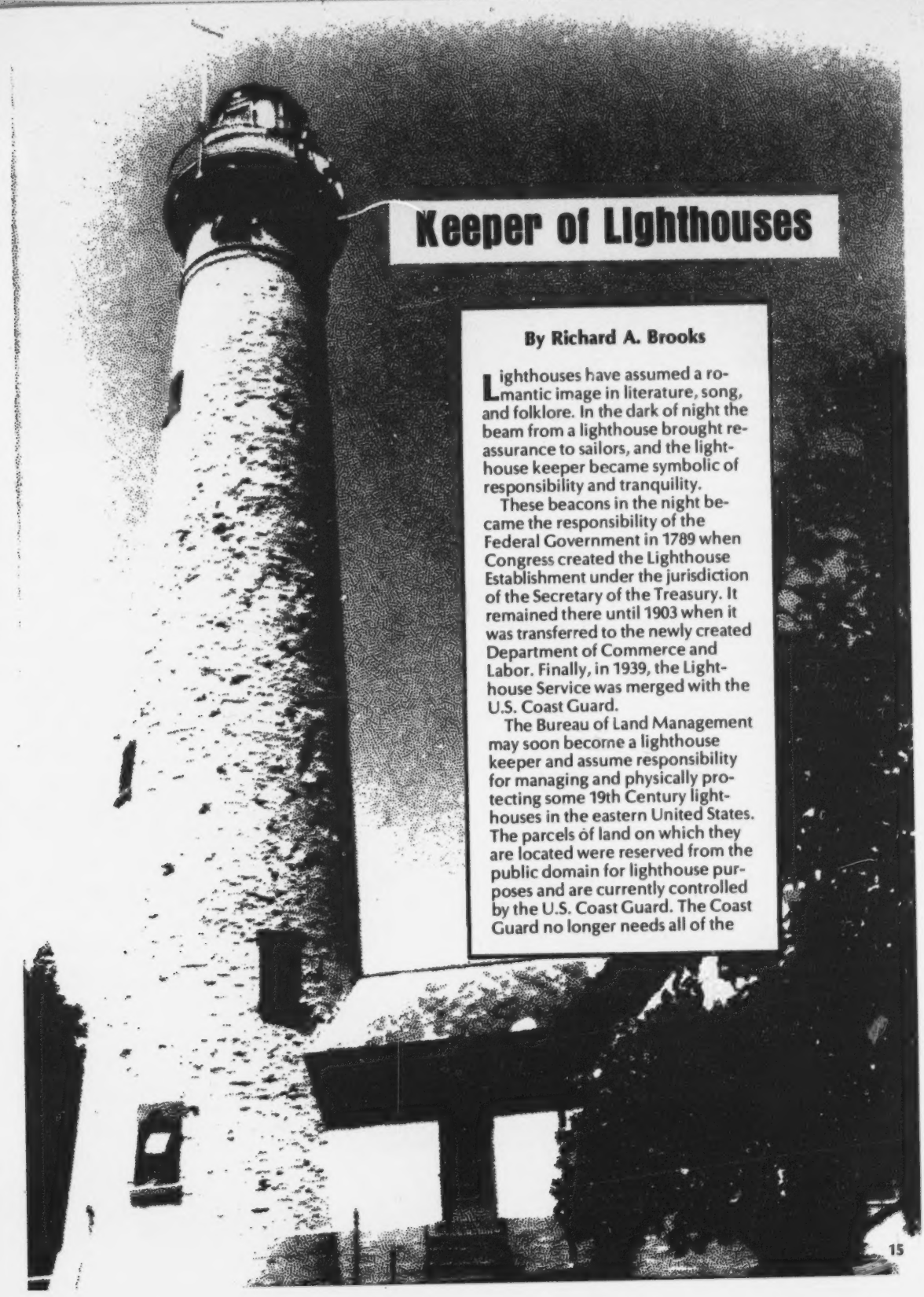
Because of the great variety of combinations of mineral ownership patterns—or "split estate"—and because of the special laws governing the lease or disposal of different mineral commodities, the Eastern States Office faces a unique challenge in minerals management within the BLM.

Federal Mineral Ownership Maps

To portray the many varieties of Federal surface management jurisdictions and Federal mineral reservations in the most usable form, BLM initiated a special mapping program in 1974—the Federal Minerals Management Mapping Program. This program involves the search of thousands of title documents for basic ownership data, as well as verification and cross-checks with numerous local State and Federal agencies. To date, 76 maps have been developed by the Eastern States Office and more are in process.

Information about BLM's Federal mineral ownership maps and Federal minerals leasing programs in the East may be obtained by writing to the Eastern States Office, Bureau of Land Management, 350 South Pickett Street, Alexandria, Virginia 22304.

Roger L. Hildebeidel was the BLM Eastern States Director at the time this article was written. He is now the BLM Budget Officer



Keeper of Lighthouses

By Richard A. Brooks

Lighthouses have assumed a romantic image in literature, song, and folklore. In the dark of night the beam from a lighthouse brought reassurance to sailors, and the lighthouse keeper became symbolic of responsibility and tranquility.

These beacons in the night became the responsibility of the Federal Government in 1789 when Congress created the Lighthouse Establishment under the jurisdiction of the Secretary of the Treasury. It remained there until 1903 when it was transferred to the newly created Department of Commerce and Labor. Finally, in 1939, the Lighthouse Service was merged with the U.S. Coast Guard.

The Bureau of Land Management may soon become a lighthouse keeper and assume responsibility for managing and physically protecting some 19th Century lighthouses in the eastern United States. The parcels of land on which they are located were reserved from the public domain for lighthouse purposes and are currently controlled by the U.S. Coast Guard. The Coast Guard no longer needs all of the

(Preceding page) Presque Isle Lighthouse. (Left) View from the top of the Presque Isle lighthouse. (Right) Grand Traverse Lighthouse

land on which 18 lighthouses are located.

The majority of these structures date from the mid to late 1800's and are located in lakes Michigan, Superior, and Huron, off the shores of Michigan and Wisconsin, and also in the Gulf of Mexico, off the coastal waters of Florida, Mississippi, and Louisiana.

The development of the lighthouses is associated with early settlements and growth of commerce, particularly in the Great Lakes Region. They were essential to the growth of maritime commerce.

Two lighthouses in Michigan today stand as historic reminders of early efforts to insure the safety of men and ships engaged in commerce in the Great Lakes Region.

Grand Traverse Light Station near Traverse City on Lake Michigan was built in 1858. It is one of the oldest lighthouses on the eastern shore of the Lake.

The Presque Isle Station near Alpena on the coast of Lake Huron dates back to 1870.

The opening of the Erie Canal in 1825 provided towns and communities in the Great Lakes Region with inexpensive transportation to markets in Europe and the East. There was a corresponding boom in shipping as grain, lumber, and coal moved through the lakes and along the canal to eastern markets.

The boom in shipping was followed by a boom in lighthouse building. But, it was not until 1855 when the opening of the Saint Mary's Fall Ship Canal provided easy access to Lake Superior that shipping in the Great Lakes reached its peak. That canal opening was followed by a second boom in lighthouse building.

Many of the new lighthouses were built on public land, still relatively abundant in the Great Lakes Region during the 1800's. These lands were withdrawn from the public domain and transferred to the agency responsible for the operation of the lighthouses. When that duty was transferred to the Coast Guard, that agency became responsible for both land and structures.

Today, automation of equipment has largely made the role of the lighthouse keeper obsolete. In some cases the light itself is no longer needed to insure the safety of shipping.

As shipping developed in the Great Lakes, lighthouse design changed to meet navigational needs under a variety of circumstances. Costal lights marked the shoreline and harbor lights helped ships navigate deep water channels into the harbors.

Harbor Light Styles

The Grand Traverse light is typical of those lighthouses designed for harbors. Here the light tower is over the roof of the keeper's house. It is reached by a spiral staircase leading up from the second floor. At the top there is a glass-enclosed room called the "lantern" which protected the lamp. At Grand Traverse the lamp is approximately 40 feet above ground level.

Over the years, lanterns have varied considerably in design. The "birdcage" lantern was quite common during the early years, but by 1870 polygonal structures with eight to 10 sides were almost universal throughout the Great Lakes region.

At one time or another candles, sperm whale oil, rapeseed oil, lard oil, and kerosene were used as fuel for the lamps. All gave off fumes that had to be vented through a ventilation ball in the roof above the lamp. With the advent of the 20th Century, electricity replaced the various fuels and solved the problem of fumes.

In order to reach ships miles from shore, the light from the lamp had to be concentrated by reflectors and focused through a lens. The kind of lens used became a matter of controversy. In 1812 the Government bought patent rights to the Argand lamp and parabolic reflector system from its originator Winslow Lewis. Ironically, this arragement proved unfortunate even though the lens was a vast improvement over earlier systems. It delayed by more than 30 years the adoption of the superior Fresnel lens, developed in 1822 by the French physicist Austin Fresnel.

The Fresnel lens was a beehive-shaped apparatus of prisms that revolutionized the lighthouse operation by making it simple to maintain a good light. However, by 1857 most of the lighthouses on the Great Lakes had the new Fresnel lens. Since Grand Traverse was not built until 1858 it had the improved lens from the beginning.

The Presque Isle Station

The Presque Isle station is typical of lighthouses designed to mark the coast line and is markedly different from the structures at Grand Traverse. The lantern sits atop a 113-foot round tower, 19 feet in diameter at the base tapering to 12 feet at the top. It is surmounted by a round iron watch room and a 10-sided cast iron lantern.

The tower has outer and inner walls separated by a 31-inch air space at the bottom and by a four-inch space at the upper balcony. The tower is connected to the keeper's house by an enclosed passageway.

This light was also fitted with the improved Fresnel lens, and produced a beam that was visible 18 to 19 miles from shore. The original lens is one of over 100 still in use on the Great Lakes. A 1000-watt bulb is the source of light.

Saving Our Heritage

Today, many of the lighthouses and associated structures are endangered—threatened both by nature and vandals. In the early days structures were often built too near the water. Wave action eroded the surrounding land and sometimes undermined the lighthouse itself. It was not uncommon for light stations built too close to the water to have to be relocated further inland.

In the Great Lakes area the exterior brickwork of some structures is deteriorating because of weathering and the destructive moisture within the walls.

Neglect of frame buildings leads to rapid deterioration. Many must soon be stabilized or they will be lost forever. Empty buildings become targets of vandals and looters.

Once the responsibility for preservation becomes the duty of BLM, Federal regulations will require the Bureau to determine if the lighthouses and associated buildings are eligible for inclusion in the National Register of Historic Places—a listing of properties having historic or prehistoric value.

One step in this process—the gathering of information on the historic values to qualify properties for inclusion in the Register—has already been completed for Grand Traverse and Presque Isle lighthouses. From the information compiled, the State of Michigan Historic Preservation Officer has determined that they are eligible for the Register.

Listing on the Register does not guarantee preservation. It does, however, insure public visibility and official recognition of the cultural values of the properties and that these values will be carefully considered before any structures are disturbed.

BLM's Involvement

Present planning calls for the Coast Guard to transfer all land and structures at Grand Traverse to the Bureau. At Presque Isle the story is slightly different. The lighthouse itself is still in use and will remain under Coast Guard jurisdiction. But since the lighting mechanism has been automated, the surrounding 100 acres of land and associated structures are no longer needed. These will be transferred to BLM.

Acquiring jurisdiction does not mean that BLM will necessarily become involved in the management and development of the properties.

The facilities at Grant Traverse, including the lighthouse and 14-acre reserve are now being managed as an interpretative center by the State of Michigan's Department of Natural Resources. BLM would like to transfer the property to the State agency as an addition for adjacent Leelanau State Park. The Bureau's role would be to prepare papers for the transfer and to draw up stipulations requiring the State to maintain the integrity of the historic structures.

At Presque Isle the township manages the property surrounding the lighthouse under terms of a lease with the Coast Guard. After BLM acquires jurisdiction, the lighthouse keepers' dwellings will probably be transferred to the township along with the land it now leases. The transfers would contain stipulations requiring the township to preserve the historic values of the property.

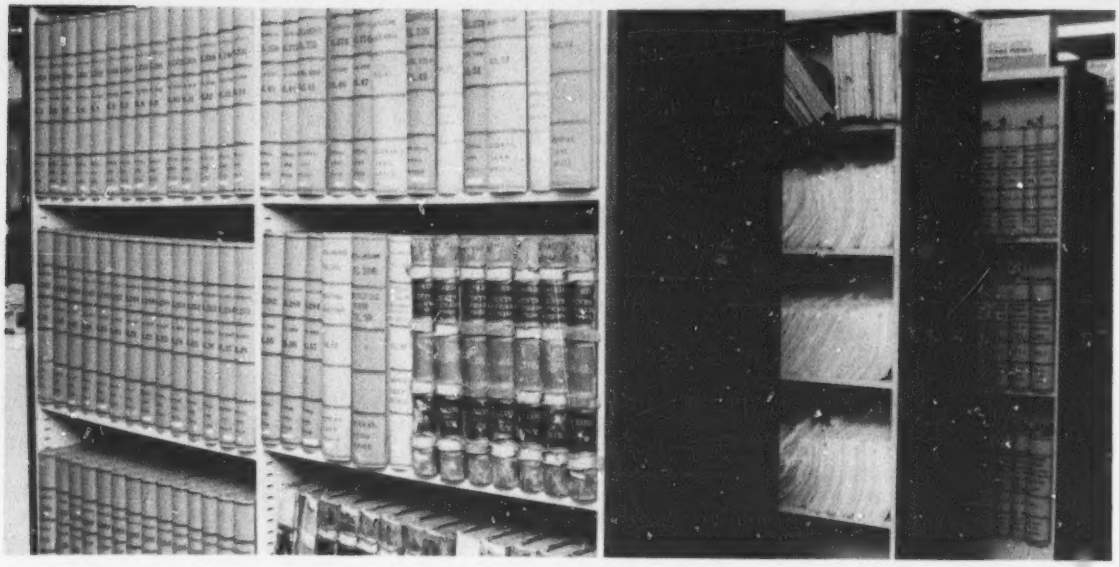
Only if the State of Michigan or the Presque Isle Township declined to accept responsibility for the properties would the Bureau seek other alternatives. The historic structures would then probably be protected by withdrawals and managed by BLM or another public agency or private institution willing to meet the stipulations to preserve the historic integrity of the sites.

The lighthouses in the Great Lakes Region, as well as those along the coastal areas of the Gulf of Mexico and the Pacific coast, have played an important role in the commercial development of our Nation. Typical examples should be preserved.

The BLM intends to have State and local agencies, and the people they represent, involved in both the decision-making and, where practical, in the daily management and protection of this important segment of our past.

Richard A. Brooks is an Archaeologist in BLM's Eastern States Office, Alexandria, Virginia

We would like to thank the following individuals who have been extremely helpful with BLM's lighthouse project: Dr. Charles K. Hyde, historian, Wayne State University who was instrumental in the nomination of the lighthouses to the National Register of Historic Places; Noel Johns, Investigator for BLM's Eastern States Office; Donald Jackson, of the Historic American Engineering Record and Mr. Nate Willis, of the U.S. Coast Guard.



(Above) The Eastern States Office houses 8,978 bound volumes, containing over five million patent documents. (Below) Many old land titles and patents require special storage.

The Biggest Land Title Office In the World!

William J. "Doc" Dorasavage and Paul Herndon

The history of public lands in the eastern United States can be traced through the Bureau of Land Management's Eastern States Office land records, dating back to the beginning of westward expansion. Since that time, Federal land records have been accumulating; and most of them—field notes, survey plats, patent records, tract books and case files—are being used daily at BLM's eastern field operations headquarters in Alexandria, Virginia.

The Eastern States Office maintains the records of some 7.5 million land transactions, involving over a billion acres of land. Each year, the office—often called the "biggest land title office in the world"—furnishes over 50,000 copies of specific records to private citizens, surveyors, title attorneys, abstract companies, industry representatives, agencies of Federal, State, and local governments, and historical researchers.

To explain how BLM acquired all these records, it's first necessary to go back to the end of the Revolutionary War, when the U.S. Government found itself faced with a huge debt. That's when the Continental Congress passed the Land Ordinance Act of May 20, 1785, authorizing the Treasury Department to survey and sell public domain land as a source of revenue. The public domain is defined as all the land originally acquired by the United States for purposes of National expansion. The Act also established the policy of "survey before settlement"—a policy that continues to this day. After heated debates in Congress about the best methods of survey to be used, the rectangular system was adopted so that lands could be identified with certainty by a legal description. The survey of the public lands was the first step in the public land disposal system, and the surveyor's field notes became the first written public land records.

Today, the BLM Eastern States Office maintains a complete set of field notes and township plats covering thirteen public domain States within its 31-State area of jurisdiction. The field notes are filed by

State in 1,745 bound volumes; and over 30,000 plats are filed by State, township and range.

In 1787, after the first surveys were completed in Ohio, the first public domain lands were sold from a one-room office of the Board of Treasury in the Federal Building located in lower New York City. That office was relocated to Philadelphia in 1790.

As events rushed our young Republic toward the War of 1812 with England, settlers continued to pour into the frontier in search of land with little thought as to how the international complications would affect their future. Ohio lands, ceded by the Indians in the Treaty of Greenville, were soon filled with settlers and fingers of settlement probed north from the Ohio River along river valleys in the Territories of Indiana and later Illinois.

Settlement proceded at an equal pace south of the Ohio. Between 1800 and 1812 Congress created 18 land districts and the Treasury Department sold over four million acres of public land for settlement.

When the public lands were sold, "patents" were issued. In this case, patents are deeds that transfer land ownership from a sovereign (the United States Government) to a buyer. Patents are the best form of warrenty deed, and are often the first record in a chain of title to a piece of property. Therefore, they are extremely important in establishing private ownership of land. Prior to March 2, 1833, all original patents were actually signed by the President of the United States; after that, designated officials signed in his behalf. BLM's Eastern States records include the earliest patent signed by a President. It is dated at Philadelphia, March 4, 1792, signed by President George Washington and countersigned by Secretary of State Thomas Jefferson.

Today, the BLM Eastern States Office houses 8,978 bound volumes, containing over five million patent documents. Some patents issued before 1908 are filed by State and name of the land office where the certificate originated. Others are filed according to the act of Congress under which they were issued, regardless of geographical location. Since 1908, all patents have been assigned consecutive serial numbers and filed numerically.

Congress had set its land disposal policies when it adopted the Ordinance of 1785. The deficiencies of that policy, including the requirement that all public lands be paid for in cash, brought wide spread demands for a reform of public land laws. Congress responded, and on May 10, 1800, President John Adams signed a new public land law meeting most of the demands of the settlers.

The new Act provided for credit sales of public land, reduced the minimum size of individual tracts that could be sold to 320 acres, and set a $2 per acre minimum price for public lands. It retained the provision that all public lands be sold at public auction.

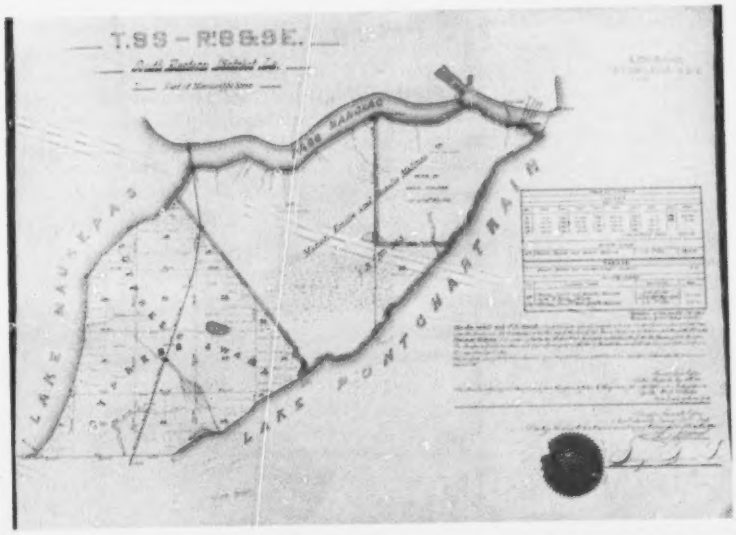
Under the credit system, a person buying a tract of public land had to pay one-twentieth of the agreed price at the time of the sale and one-fourth 40 days later. A second quarter was due at the end of the second year and the rest during the third and fourth years. The Government charged six percent interest on the unpaid balance, but offered an eight percent discount for payments made before the due date. Land not fully paid for at the end of the fifth year was forfeited and resold at auction.

With that solid accomplishment, Adams soon relinquished his office to the newly elected Thomas Jefferson. Jefferson appointed Albert Gallatin to be his Secretary of the Treasury. Gallatin was to be responsible for the administration of the public lands for the next twelve years. (Through the first term of James Madison.)

Gallatin was a resident of western Pennsylvania and understood the problems of the frontier. He believed that public lands should be sold in small tracts to the individual settler, and had a keen interest in the public domain.

During his tenure, the sale of public land, spurred by credit sales, was greatly expanded. The credit system, a blessing to the settler, was a bane to the accountants. Gallatin insisted on absolute accuracy and also instructed his receivers that they must accept any payment offered by a settler on his account, no matter how small. The calculations involved in figuring interest and discounts on a payment of a few dollars complicated the work for all.

Many things combined to increase the work load. From 1800 to 1812 Congress created 14 new land dis-



A cadastral survey plat, Louisiana, 1882

A "Time Line" for the Eastern State Office's Federal Land Records

1785	Land Ordinance Act
1787	New York City
1790	Philadelphia
1800	Washington, D.C.
1812	General Land Office created (GLO)
1814	GLO burned!
1833	GLO burned again!
1839	Treasury Building
1849	GLO transferred to Interior
1855	Patent Office Building
1900	GLO Building
1917	General Services Administration (old Interior) Building
1937	New Interior Building
1946	GLO renamed Bureau of Land Management
1954	Eastern States Office (ESO), part of Washington Office (WO)
1961	WO Division of Field Services (Merger of ESO and WO Branch of Field Services)
1964	Eastern States Office again!
1966	Silver Spring, Maryland
1967	Eastern States Land Office
1973	Eastern States Office again!
1979	Alexandria, Virginia
1985	

tricts in addition to those established in 1800. For each new district a land office had to be set up and two new officials appointed to run the district.

Many were the causes for delay in getting ready for a land sale. One was the requirement that all public land be surveyed before it was sold. The survey might be delayed because of Indian trouble, the absence of a supervisor, or by the mania of some surveyors for pin-point accuracy. Surveyors never had enough clerical help. The new administration practiced frugality as a matter of principle, but the practice was frequently carried to the point of parsimony.

With an ever-increasing workload, the Treasury Department office moved from Philadelphia to the new Federal city of Washington in 1800. There, six clerks kept land records and issued patents from a two-story wooden building on 15th Street, near Pennsylvania Avenue.

The tract book system of recording land transactions was established about that time. The tract books began simply as listings of all the transactions involving surveyed public lands—by State or territory, meridian, township, range, section and subdivision. The number of entries increased rapidly as land offices from throughout the country forwarded certificates to the headquarters office, where official patents were issued. Now, the tract books are used as the basic index for public land title research in the eastern States.

Today, there are 1,582 original General Land Office tract books at the Eastern States Office, showing how, when, and to whom title to public domain lands passed from the United States—in the States of Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Mississippi, Ohio and Wisconsin. An additional 2,325 tract books covering the western public domain States are also filed at the office on microfilm. For day-to-day management, the western BLM State Offices use the Master Title Plat system instead of tract books.

As the number of sales increased, Gallatin found himself more and more embroiled in the details of public land administration. As a result, other duties were neglected. As the Nation headed toward the Revolution it was obvious that his time was needed for more important matters. At last Congress heeded his plea for relief.

On April 25, 1812, by an Act of Congress, the General Land Office was created within the Treasury Department. It was the first bureau to be created within a department.

In creating the General Land Office, Congress combined the functions that had previously been scattered among three Federal departments—Treasury, War, and State. The Secretary of the Treasury had directed the survey and sale of public lands. Treasury also maintained records and accounts. The Secretary of War administered military bounties and bounty lands. Patents were issued by the Secretary of State.

Two years after its creation, the General Land Office was destroyed by British troops invading Washington. It took two years to rebuild a similar structure at the same site. Fire again destroyed the two-story wooden building in 1833, but all records were rescued and carried to the safety of nearby private homes. For six years, the General Land Office occupied a row of five private houses on the south side of Pennsylvania Avenue, between 14th and 15th Streets.

During the same period, a total

Land Office Staff, early 1900's at Perry, Oklahoma.

Early Government Land Office surveying team on the job.

of 179 local land offices were eventually established within the thirteen eastern public domain States, all generating more and more record files.

In 1839, the headquarters moved into the new Treasury building at 15th and Pennsylvania, where there was enough space for the increasing volume of files—and it was fireproof!

The General Land Office was transferred to the newly-created Interior Department in 1849, and, after three more relocations, the records were moved to the present-day Interior building in 1937. In 1946, after a major reorganization, the General Land Office became a part of the new Bureau of Land Management within the Interior Department.

After 1950, reorganization—and more moves for the public land records—became commonplace. In 1954, the Bureau abolished regional offices in favor of State offices; and old Region VI became the Eastern States Office. Eastern States Office later merged with the Washington Office Branch of Field Services and became a Division of Field Services within the BLM headquarters. In 1964, another Bureau reorganization changed the Division back to the Eastern States Office, which in the process inherited the remaining General Land Office non-decentralized lands activities formerly retained in the BLM Director's Office.

In still another reorganization in 1967, the Eastern States Land Office, by then located at Silver Spring, Maryland, was created. Finally, in 1973, the Eastern States Land Office again became the Eastern States Office. Since 1979, the office has been headquartered at Alexandria, Virginia, where all the records are protected in fireproof, temperature-and-humidity-controlled areas. Eastern States' functions have grown, too—from those limited to a land office to those of a more widely-based multiple-use resource management office.

Due to the age and wear from frequent use, the records are slowly and continuously losing their readability. Since they are the original records and there are no duplicate sets, the documents must be preserved before further deterioration renders them unfit for use. Accordingly, a Records Improvement Project was initiated at the Eastern States Office in 1978. The project is expected to take 10 years or more to complete, while documents are restored, microfilmed and indexed. The records will also be merged into an automated information system.

After it's all done, then—and only then—can the old original documents—the first records of America's national expansion—be retired to their rightful resting place, the National Archives of the United States—in Washington, D.C.—not too far from 15th Street, near Pennsylvania Avenue, where their first Washington, D.C. home was!

"Doc" Dorasavage is Chief, Branch of Lands and Title Adjudication, BLM Eastern States Office, Alexandria, Virginia

Paul Herndon is a Public Information Specialist in BLM's Washington, D.C. Office of Public Affairs

Citizens line up to register for Rosebud land offering in Gregory County, South Dakota, 1904. The General Land Office here is located in Yanton, South Dakota.

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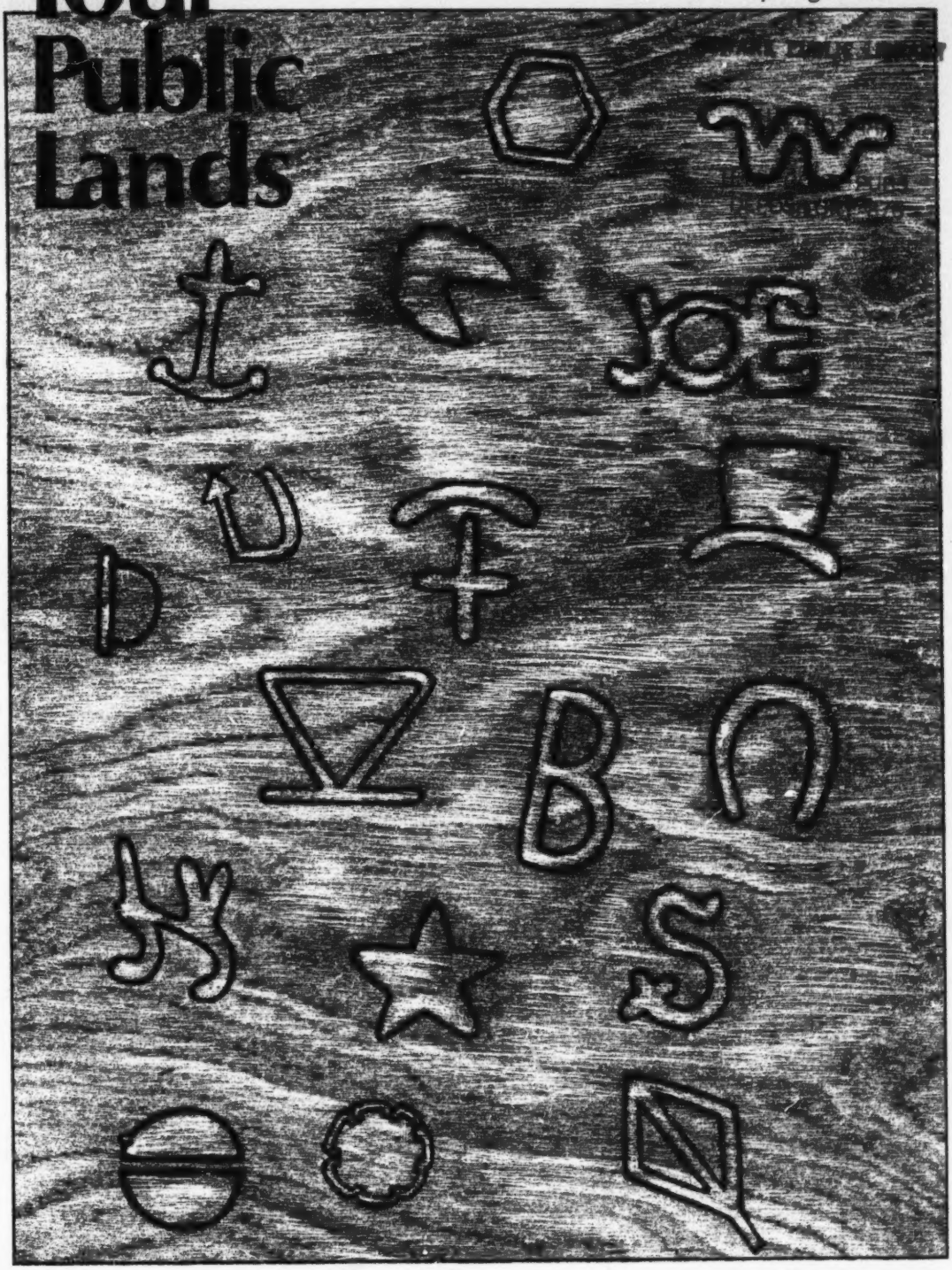

Rangeland Management

It's Better in the 80's!

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U.S. Department of the Interior. As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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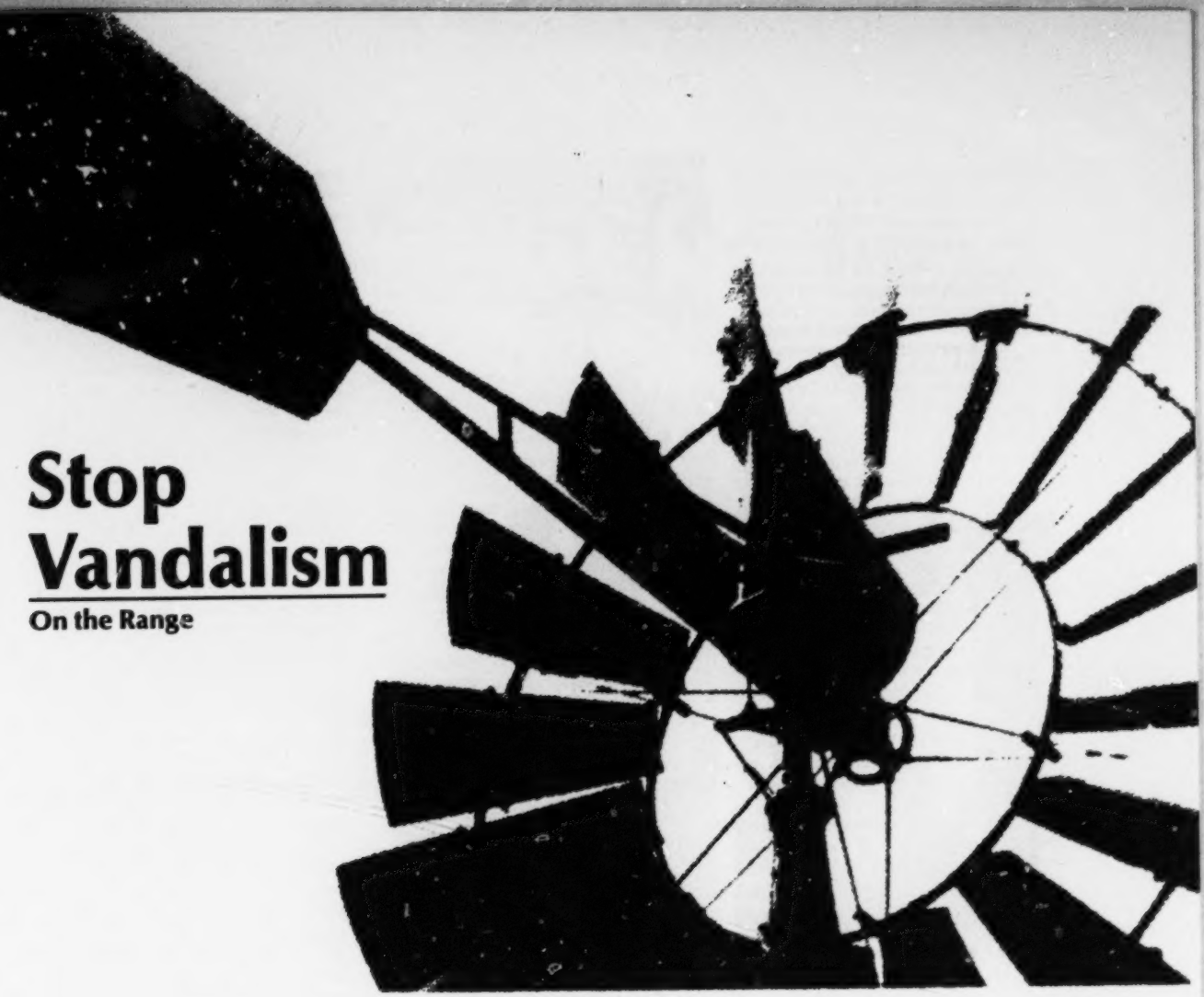
Stop Vandalism

On the Range



This windmill's blades and tails are riddled with bullet holes. Its pump mechanism was destroyed by gunfire. Replacement cost $1875. Later, vandals destroyed the windmill's sucker rod.

By Jack de Golia

Time was when you could leave equipment out on the range in the West, go away for a week or two, and come back to find your equipment just as you left it.

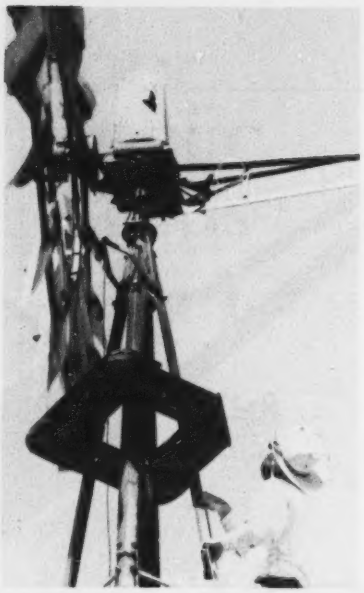
Sadly, it seems those days are behind us now. Increasingly, BLM officials are hearing reports of vandalism. Ranchers complain of fences being cut, windmills being shot, and stock tanks riddled with holes.

In one case in Arizona's Yuma County, an entire windmill was stolen. It stood just 100 yards from a junction of two major State highways.

In the Sonoran Desert country administered by BLM in Arizona, water is a valuable and scarce commodity. With summer temperatures reaching 110°F or more, cattle won't last long without water. Yet a few bullet holes, thoughtlessly shot into a stock tank, can kill cattle and wildlife as sure as the bullets that made the holes, when the water drains out onto the desert floor.

One of the most common items stolen from the desert range are water pump motors. Ranchers often use small, two-cycle motors to pump water from remote wells. A rancher will put in enough gasoline to run the motor long enough to pump a desired amount of water. When the gas runs out, the pump quits. Meanwhile, the rancher will have gone on to other areas on the ranch. Left alone, though, these motors are easy prey. The theft may not be discovered for weeks; witnesses are rare.

Camping at water sites (springs and wells) can be a subtle form of vandalism when it deprives cattle and wildlife access to the water. In spite of State laws prohibiting the practice, it appears to occur anyway, especially during hunting season.



(Below) A fence post blasted in two by a vandal's shotgun (Top right) A damaged windmill near Kingman, Arizona. The rancher had to bear the labor costs of installing a new pump mechanism. (Bottom right) Bill Simson listens as Al Carpenter, Manager of the Mohave County Electric Co-op, explains how vandals damage utility company facilities in isolated places.

With the increased use of desert range lands, ranchers also see an increase in damage to fragile desert soils from off-road vehicles. In other cases, range facilities in remote spots have been vandalized by people driving cross country.

Especially alarming about these examples of vandalism is that they have the potential of dividing the very groups that must work together to solve the problem. Ranchers, troubled by thoughtless public-land users, may feel one group or another is to blame. Hunters may feel anger at ranchers who lock gates on roads leading into a ranch.

Concerned about vandalism and its effect on relations between public-land users, the BLM's Phoenix District Advisory Council looked into the problem.

The council held a public meeting in Kingman, Arizona, on October 22, 1981, and visited several ranches to assess the problem first hand. After hearing from the public and seeing the problem for themselves, the council members put together a set of recommendations. They presented the recommendations to the Phoenix District Manager in December 1981.

The seven council members serve two-year terms and volunteer their time to provide advice to BLM. Like council members on all 55 BLM district advisory councils, Phoenix council members come from a wide range of public land interests.

The council recommended a three-pronged attack on vandalism: 1) increased law enforcement by Federal, State, and local officials; 2) intensive management actions in particular situations (such as limiting off-road vehicles to existing roads if erosion from crisscrossing vehicle tracks is severe); and 3) an education campaign for the general public and judges.

The council suggested a meeting between BLM, Arizona Game & Fish Department, county sheriff, and Arizona Livestock Sanitary Board officials. All agencies concerned have limits on the manpower and money they can devote to controlling vandalism. A coordinated effort is therefore essential.

Council members also urged increased use of the Arizona Game & Fish Commission's "Help Our Wildlife" hotline. This is a toll-free telephone number citizens can use to report game law violations, including vandalism. The State gives rewards for convictions resulting from hotline reports.

A chief problem with range land vandalism is that much of it goes unreported. As part of the education campaign, the council suggested BLM urge those ranchers holding BLM grazing leases and permits to report vandalism to county sheriff departments.

Finally, the council noted the importance of cooperation between ranchers, hunters, and other public land users. Together these groups can work for greater law enforcement, let judges know the seriousness the community attaches to vandalism, and serve as extra "eyes and ears" on the lookout for vandals.

The goal is to encourage the few who vandalize to stop—and think.

Jack de Golia is a Public Information Specialist in BLM's Phoenix District, Arizona.

Rangeland Policies for the Future

Robert F. Burford,
Director of BLM

Ranchers and stockmen who use the public rangelands have been working for range improvement since before the Taylor Grazing Act was passed in 1934. So has the Bureau of Land Management—even back then when it was operating under an entirely different name. Both groups are still working at it.

The Bureau is emphasizing the necessity to improve our public rangelands as rapidly as possible and in the most cost-effective fashion. The results we produce may not be discernible tomorrow, or even next year, but we are firmly committed to being better public landlords and better trustees over the property we manage for the people of this Nation.

The job involves managing the Nation's public lands, and the resources on those lands, in the public interest. That means orderly development and wise use, so that those resources will be a benefit to all Americans. It means conservation and striking a balance between how much of our resource base to use today and how much to save for future generations.

It's a philosophy that has been enunciated by President Reagan and by Secretary Watt. According to the polls, it's a philosophy the people believe in, too.

In this Administration, we are going to be decision-makers. That's what we were called in to do—and that's what we'll do. We may make some people unhappy because we do make decisions rather than endlessly analyze or study. However, we have two guiding precepts: economic recovery and the National interest. We think those precepts will guide us well in producing results.

With our new leadership, we will be decreasing, rather than increasing, the amount of red tape. Where we must have Federal regulation, that regulations will be reasonable, easy to understand and comply with. It will encourage needed development in an environmentally sound manner and will be designed to establish a balance between multiple uses, not a stumbling block to any use.

In rangeland management, the first step we have taken is to develop a new policy—one that is based on "selective management" of grazing allotments. Basically, the new policy means putting the biggest piece of the appropriation pie where it will do the most good. Out on the range we call that "getting the biggest bang for the buck". In corporate boardrooms, they refer to it as "highest return to the stockholder". In your personal finances you call it "stretching the budget" It's just good money management—the cornerstone of economic recovery.

Whatever you choose to call it, the Bureau's proposed new strategy for managing and improving the public rangeland is a recognition of long-standing problems, offering workable solutions and some definitive guidelands for improving the future.

Let me briefly describe the "selective management" technique.

"As a multiple-use agency, BLM must consider range conditions in the overall context of *all* rangeland resources."

The first thing to be done is to analyze all the grazing allotments so that those sharing similar characteristics as to resources, economics, management techniques and social characteristics are grouped into one of three categories:

CATEGORY M: consists of highly productive allotments in good condition, with no resource conflicts. The management objective on these allotments would be to maintain the current satisfactory situation—a move which doesn't take a very big piece of the available money pie.

CATEGORY I: would be the biggest money user. These are allotments in fair-to-poor condition, which are not producing at a medium-to-high production potential, and where resource conflicts exist. These are the allotments where the present condition stands a good chance of improvement...and these are the places where the largest shares of time and money will be applied.

CATEGORY C: consists of allotments which are in stable condition, with no major resource conflicts, but with economically-limited production potential. Our short-term management route would be to act as "custodians" in such areas, and to prevent further deterioration.

"Selective management" does not mean we are going to neglect those ranges which are in Category C. We will monitor these to see that they do not suffer further damage. However, with a limited budget, we will be applying the dollars where they will give us the highest return to the public.

By doing just that, the Bureau of Land Management in the past year has contributed almost $9 billion to the General Fund of the U.S. Treasury from multiple use programs on the public lands. During the same period, $461,347,000—almost half a billion dollars—was distributed to the State governments, and still more to individual counties in the West. In the present economic situation, that is an exceedingly important asset to government operations and to the people those governments serve.

In the field of rangeland management, BLM is also going to encourage investment by the private sector—the range user. Ranchers holding grazing leases on public lands administered by the Bureau will be required to bear the cost of maintaining improvements on their allotment. These improvements may be structural or non-structural, and could include fences, wells, springs, reservoirs, pipelines, or other needs. Under the new rules, operators would be allowed to perform the maintenance work themselves; to contract with others to do the work; or, to reimburse BLM for the cost of maintenance.

The Bureau would continue to bear the cost of constructing or replacing the improvements unless, of course, replacement was necessary because of a lack of maintenance. But, the burden for maintaining an improvement that benefits a permittee's grazing allotment will be assigned to the permittee.

Operators' responsibilities would be spelled out in an agreement with BLM and would be made a condition of the grazing lease. Grazing privileges could be revoked if operators failed to do the maintenance work according to the standards in the agreement.

This is just another move toward balancing the responsibilities between government and the private sector...to provide business with a climate of certainty...and to get government out of the places it should not be, places where the private sector can do a better job.

One of our major priorities in managing the public lands is to minimize short-term disruption and ensure long-term stability for the western livestock industry and the economy of many western communities dependent upon those lands and their resources.

As a multiple-use agency, BLM must consider range conditions in the overall context of *all* rangeland resources. Energy and minerals are just two of the resources that can be found on the range.

We recognize the critical need to develop those resources in an environmentally balanced manner that will contribute to multiple-use of the land.

We recognize the continued reliance of the western livestock industry and communities on the public lands, and we will strive to balance the local mix of uses. We feel the best way to stabilize the economy in these areas is to ensure sustained-yield management of the resources that are the backbone of the economy.

Environmental and economic considerations have an important place in rangeland management decisions and can be successfully used in tandem. The human environment includes the social and economic systems within which we operate as men and women, as well as the biological systems. Most decisions we make have economic effects. Some may affect the economy of the entire Nation. Others may affect only a small number of people, or a small community.

We recognize this, and attempt to consider both local and national interests and impacts in our decision process. Whenever possible, we consult, coordinate and cooperate with local as well as national level interest groups to resolve concerns.

We won't always please everybody...but we will be good neighbors, and we can be depended upon. Our goal is to be a good, balanced, productive landlord for our owners and our tenants...and to managing the public's resources and the public's money for the best return to the taxpayer.

Cowboys, Politics, and the Taylor Grazing Act

By Paul Rigtrup

It was understandably difficult for the long-established and settled inhabitants of the American East to believe that the great uncivilized territory in the West could produce men who were their intellectual equals. Just listen to the way they talk! And, look at their clothes! And, how can anyone live a dozen years in those pointy toed boots, without pinching his brain – at least a little bit?

Contrary to stereotype, ranchers were sensitive, to this and other kinds of condescension. However, for most of them, sensitivity had long since given way to the pragmatic realities of survival in the harsh environment of the West.

Early evidence of this pragmatic side of the western cattle rancher is to be found in the way he discovered the realities of American political practice, and then capitalized on those realities.

By 1933, most of the pragmatists on the cattle ranches in the West knew what they needed. Two key factors in the management of the western grasslands were the need to tie the grazing lands to smaller tracts of irrigable land which could produce hays, grains, or winter forage. And, of critical importance was access to water for grazing.

By 1933, when he came to testify for "his" Taylor Grazing Act, Conressman Ed Taylor had seen a lot. Indeed, it was his great reputation as a leader in public land law making which led his friends in the livestock industry to seek his help. He was the owner and operator of three small ranches. During his twenty-six years in Congress he had served twelve years on the Public Lands Committee. He also recognized where issues could be more easily confined and controlled. He rose to chairman of the Public Lands Subcommittee in the House Committee on Appropriations.

He perfunctorily laid out his expectations for this new law. Although he praised the grazing management in the forest reserves, he expected the new grazing districts on the arid range to be established under the Secretary of the Interior. It was clear that the lands in grazing districts would be closed to other entries. He saw the lands retained in Federal ownership and leased under preferential terms mostly to small cattle ranchers who owned the meadows and hay lands and, most importantly, the watering places or rights.

The history of the 10 State region from Colorado west to the Pacific does not suggest that the cowboys would hold many of the keys of political power. To begin with, they were never very numerous. If the cowmen's votes – and their opportunities – were so few, how did they manage to win as often as they did? They were horse traders! It was this horse trading sense, sometimes elevated to a kind of cowboy statesmanship, that led them from their first big political victory, the Taylor Grazing Act, into a quarter century era of administrative progress and dominance.

During the 1934 hearings Ed Taylor introduced another cattleman from western Colorado to testify in favor of the Taylor grazing bill. He was Farrington R. Carpenter of Hayden. Before long he would become a central figure in grazing history, and perhaps its most fascinating figure. He laced every conversation with the colloquial language of the cowboy, like "a bull with a batch of calves." He was the epitome of the funny talking cattle rancher from out West. He never drew attention to his formal education, but if you asked him he'd admit to an undergraduate degree from Princeton – and a law degree from Harvard!

If the cowmen's votes were so few, how did they manage to win as often as they did?

During his first year at Princeton he filed on a homestead in Routt County, Colorado. He then persuaded a friend to file another homestead three miles away and, by fencing carefully selected 40's, they managed to enclose considerable public land on which to run their cattle – an accepted practice in that time and place. After law school he returned to Hayden to raise cattle and to establish a law practice – almost entirely lands cases in the land office at Glenwood Springs. Of law practice in Hayden he has said, "There had never been a lawyer there before, there never was after I left, and there was some question whether there was when I was there."

After a quarter of a century as a cowman-lawyer, he'd shed all vestiges of the Ivy League. He went to Washington in an effort to qualify beef as a basic commodity before the Agricultural Adjustment Administration and encountered Ed Taylor only when he went to the Congressman's office to pick up mail. The Congressman took advantage of his presence in Washington to gain a credible witness for his grazing bill. In less than a year Carpenter was offered the job of "running" the Taylor Grazing Act.

One of "Ferry" Carpenter's favorite reminiscences was about his trip to see the Commissioner of the General Land Office to get maps.

Carpenter: *"I've come to get the maps."*

Commissioner: *"What maps?"*

Carpenter: *"The maps to the lands."*

Commissioner: *"What lands?"*

Carpenter: *"The lands I'm to manage."*

Silence (very awkward)

Commissioner: *"There's no maps."*

Carpenter: *"If there's no maps, how am I to find the lands?"*

Commissioner: *"We can't find the lands!"*

According to Carpenter he walked away talking to himself. This is how he described his first encounter as director-designate of the new division of grazing with the bureaucracy of the General Land Office. It was but an early glimpse at other events yet to follow.

There was a world of inherent tension between Carpenter's new grazing division – the "Taylor Graze" was what many ranchers called it – and the old and staid General Land Office. But the opening language of the Taylor Grazing Act gave the conflict a special bite. Even though the description title of the Act began with these words: "To stop injury to the public grazing lands—"; the preamble included these words: "pending its final disposal—"! So the "Taylor Graze" is created to nurse the lands back to some degree of health while the undertakers at the General Land Office go right ahead with preparations for the funeral.

Carpenter quickly demonstrated his determination to use his horse trading skills to beget only constructive and sound results. Even before there were appropriations and a grazing division, he set off with 17 borrowed advisors from the Forest Service, Geological Survey, and other agencies to conduct a series of public meetings throughout the West. When the first advisory board meeting occurred at Rifle, Colorado, Carpenter arrived to find the cattlemen and sheepmen not speaking. They stayed at different hotels, and refused to talk to each other. So he sent out invitations for dinner to 24 spokesmen – 12 for each side. He said for them to eat dinner together, but he got there ahead of them and arranged the seating so that they alternated – cow man – sheep man – etc. They soon learned that they could talk to each other.

Carpenter had a long standing aversion to the "papa knows best" attitude of the Forest Service. He was determined to avoid it in his new outfit. His first effort was in the series of regional meetings which began at Grand Junction. He followed that up, when on his first encounter with members of the Appropriations Subcommittee, he appeared to challenge: "You give me 40 ranchers and I can run this outfit." His bluff was called and he was provided with funding for himself, a secretary, and 40 positions.

But Ferry Carpenter was not through. He knew that when a rancher comes before the government for favors "he has a very loose idea of ethics." Those 40 government men could hardly be expected to deal with exaggerated data from all those stockmen. But Section 9 of the Act spoke of "local associations of stockmen" and of "local hearings." Taking this and other language from the Act, Carpenter soon began to create a system of local advisory boards to hear the presentations from their peers – and to keep them honest. The Congress promptly amended the Act so that Section 18 became a ratification of the advisory board

system. In addition to discouraging the "papa knows best" attitude which he detested, Ferry Carpenter had supplemented the manpower of his 40 "ranchers." By 1937, the field staff had grown to 75, but there were 678 advisory board members.

So that is how he did it. He took a raw and imperfect Act to the people themselves – the stockmen – in meetings at places like Salt Lake City, Bakersfield, Rifle. And with 17 carefully selected government men – working with the cream of the western stockmen – they wrote the regulations and the code, while the regulation writers from the eastern bureaucracy watched in disbelief. It was only a short step from the regional meetings to the advisory board system. He proceeded so independently, in fact, with the organization of advisory boards that Secretary Ickes learned about them primarily through the special agents of the General Land Office. So when Carpenter returned to Washington, he was promptly summoned to Ickes office and fired!

But the ground work had been well laid in the West and soon the White House was innundated with wires and telegrams. It was hardly overnight before Undersecretary Oscar Chapman (also a Colorado man) paid Carpenter a visit and invited him along to the White House. The next morning he was invited once again to the office of Secretary Ickes where he was told – in the words of Carpenter – "He guessed he liked me better." Carpenter remained on the job for a few formative months.

By 1938, The Division of Grazing was well established and had doubled in size. It was now a frightening bureaucracy of over 80 souls! But most of that growth was in Salt Lake City, Reno, Albuquerque, Burns, Billings, – those strange sounding towns out West. The 1938 Directory of the Division of Grazing reveals some interesting names. At least sixteen of them were to become the future movers and shakers of the Bureau of Land Management. And, for the most part, they were just like their mentor, Ferry Carpenter – they were horse traders and they were pragmatists!

Carpenter's tour of Federal service was brief – only about four years. His outfit, the "Taylor Graze" didn't do much better. It lasted only eleven years and it never reached 300 full-time public servants! But it got good roots down – all over nine western states. These remained to grow and to be felt in Washington for many years.

By this time in the late thirties some new forces were beginning to emerge. Competing values were beginning to appear – outdoor recreation, military requirements, minerals, etc. – all suggesting that the stockman's romance with the land would never be too secure. In a place in California called Hollywood, a new image of the cowboy was being molded – without benefit of advisory boards. Finally, as the war clouds gathered in Europe, the Nation began to prepare for war. When the Federal agencies were urged to move their headquarters from the heart of Washington to the suburbs, the Grazing Service found its suburbs in Salt Lake City, Utah.

As the end of World War II approached, the Grazing Service found that its own was was just heating up. Although Senatory McCarran of Nevada was given much credit for those troubles, others must share the credit. McCarran wanted to see the Service cut back to 100 employees and to be self supporting. Congressman Jed Johnson of Oklahoma wanted grazing fees increased sufficiently to make the Service self supporting, so he whacked the budget from $1,359,500 to $425,000. McCarran relented and raised the figure to $802,500; but that was insufficient to prevent separation of nearly two thirds of the Grazing Service and a short furlough of the remainder. Before the smoke cleared, the Grazing Service lost its separate existence. By Reorganization Plan No. 3, July 16, 1946, President Truman consolidated the Grazing Service and the General Land Office into the Bureau of Land Management. He had married the nurse to the undertaker!

Once again, those roots which Carpenter had put down began to emerge from the ashes. A few of his disciples were still there throughout the West . . . the pragmatists and the horse traders. They knew who held the seats and on which committees of the Congress. More importantly, they had grass roots support sufficient to carry them at least into the second decade of BLM. By the end of that second decade – 1966 – the issues surrounding public land management had become so turbulent that the management of grass and grazing had become inseparable from the many other competing values. By that time, however, the imprint of the western stockman, of Ferry Carpenter and his disciples had become permanent, and there is no way that it will ever be erased.

Paul Rigtrup is manager of BLM's Training Center in Phoenix, Arizona.

Multiple Use of Rangelands

Ed Roberts

The Bureau of Land Management in its stewardship of the public rangeland, finds itself in a transition from one world to another. A substantial portion of our rangelands have still not reached their potential for resource production. Public rangelands are falling short in meeting user demands for wildlife, recreation, and livestock production.

Emerging examples of successes are providing good examples of pathways to improved rangeland stewardship. These good examples are being forged out in a cooperative "give and take" spirit between the Bureau's professional managers, resource users, special interests, and the general public. Most importantly, local input and decisions at the "ground level" where things are actually happening and reemergence of the old fashioned ethic of being good neighbors are the keys to success.

To illustrate how this new approach is working, let's take a look at a composite situation, which will serve to portray how cooperation and hard work can make things happen, just as it has in parts of Colorado and other Western States.

The sagebrush basin was nestled in the Rocky Mountains. Ponderosa pine, Douglas fir, mountain mahogany, and aspen bordered the basin, giving it a park-like appearance. A small stream meandered through the sandy-clay soil. Willows, cottonwoods and the unmistakable green of lush ground vegetation made the stream area a vibrant ribbon among the gray sagebrush. Patches of crested wheatgrass, waving in the gentle, clear breeze, were scattered through the park. Cattle grazed the grass, strolling slowly to drink from troughs at adjacent wells. Mule deer bounded through the sagebrush, flushing a flock of sage grouse from their late afternoon rest. A golden eagle, perched in one of the cottonwoods, watched attentively as a small herd of migrating antelope paused briefly at a fence before going underneath and running gracefully to a valley bottom home elsewhere. The shrill, commanding bugle of a bull elk pierced the autumn air, echoed off the mountain sides and caught the ear of a fisherman and his family trying hard to catch some brook trout for dinner. These sights, scenes and sounds make up one of the Nation's most valuable resources: the western rangelands.

Rangeland resources – soil, water, air, vegetation, wildlife, livestock, and their composite on the landscape – are an integral part of America. Pepetuation of these values on 170 million acres of public lands depends upon applied stewardship by the Bureau of Land Management. Achieving multiple use of such resources is a demanding job. It requires constant attention and cooperation from everyone. To get a better idea of what this means, let's examine our sagebrush basin a little more closely.

Things were not always as portrayed in the basin. Only ten years ago, the soil and vegetation were slowly disappearing. Fences were old and in disrepair. Their wires stopped the antelope but let livestock wander. Grass plants were few and far between. Cattle, deer, and elk concentrated in the stream area, grazing and browsing its vegetation to the point where the plants were dying out. This overuse, plus trampling of the streambanks, left little shade, caused the streamside to cave in and washed the potentially fertile soil into ugly silt beds. It was at this point that man, often thought of as an intruder and degrader of the environment, stepped in to make things better.

Improvement of the basin began at a public meeting in the gymnasium of a local high school. The BLM area manager and his staff of professional technicians were describing how they viewed the basin's problems. The audience, consisting of ranchers, businessmen, interested townspeople, and other agency officials, were hearing

about something called a multiple use plan to solve these problems. Their interest evolved into a three-hour discussion.... Cattle were losing weight on the range and calf crops were down; recreationists complained of having to go further and travel longer to find a place to enjoy; State wildlife personnel described decreasing big game numbers and antelope dead at fence corners; avid fishermen recalled the "good old days" of a full creel of trout; the high school biology teacher could no longer take her class to the basin to study eagles and other animals; people living below the basin pointed out how the stream always seemed to flow muddy water into the river... and so it went. Something had to be done and it was clear it was everyone's job.

Changing the basin for the better required recognizing that it had its own identity. The animals, plants, soil, water, air, and people which existed there formed a unique environment or ecosystem. As times changed and human demands varied, the balance of this ecosystem was upset. Things just didn't seem to fit together anymore. Corrective steps to gain a new, satisfactory balance had to consider all the elements of this ecosystem and how they were interrelated.

Older, dying stands of sagebrush were first outlined on maps and then marked on the ground. These sites were plowed and reseeded with crested wheatgrass. Alfalfa and bitterbrush were mixed in with the grass. This provided not only good grazing forage for cattle, but also new browse forage for deer and antelope, and tender succulence for sage grouse. The soil, once prone to fast erosion, was now held by many new roots.

Local ranchers worked closely with BLM to identify the old, problem fences. These were repaired or replaced with new ones, which controlled livestock. They also were designed so that the bottom strand was high enough to pass antelope and the top strands were low and wide enough to let deer cross over and through. Once the fences were changed and the seedings in, ranchers proceeded to help BLM install new wells and springs to water their cattle. Water from these developments was piped to drinking troughs. each trough contained a curious-looking wire mesh ramp. This device enabled small birds and mammals, who found their way into the troughs, a way of escape. All together, both livestock and wildlife had regained needed food, water and cover. The soil, now healing, gave rise to a new growth of native vegetation. Cattle could now leave the battered stream bottom, graze the upland grass, and drink from the wells and springs.

The State wildlife agency, U.S. Forest Service, and interested groups helped also. Using new wildlife information, the State adopted hunting seasons for the basin and adjoining areas that better balanced big game numbers with their habitat. State fishery crews surveyed the stream with BLM biologists. Several stream structures were installed to create resting pools, spawning beds, and rearing areas for the brook trout. Severely eroded stream banks were seeded, planted and the old cottonwoods given new life with help from local representatives of the Izaak Walton League. The high school biology teacher and other members of the Audobon Society installed some bird boxes along the stream and throughout the basin to add new sites for bluebirds, swallows, and other "cavity-nesting" birds.

The U.S. Forest Service, working with BLM foresters and range conservationists, developed new systems for timber harvest and cattle grazing. This retained the pine, fir, aspen, and mahogany around the basin as prime habitat for elk. Also, cattle could more easily be trailed to and from Forest Service summer pastures to BLM spring and fall ranges. As a result, cattle left and entered the basin in better condition, and calf crops increased.

The situation portrayed for our sagebrush basin is typical of the "new world" for many areas on western rangelands. To some, it may seem "ideal" or even unrealistic. Still the cooperation steps and corrective actions *are* realistic, *are* taking place, and *do*, certainly, establish a goal that BLM is trying to reach. Different environments, problems, and user demands, of course, change the management strategy and techniques but not the purpose – stewardship. The BLM, together with other Federal and State agencies, work with the public to manage the public lands. On-the-ground improvement actions and monitoring of field conditions ensure that management objectives are kept on track and commitments are honored. The end result is perpetuation of rangeland resources and achievement of multiple use of their values for the public.

Ed Roberts, formerly a Wildlife Specialist with BLM's Washington D.C. Office, is currently Assistant District Manager, Socorro District, New Mexico.

Success on The Pipeline Allotment

An Allotment Management Plan in Action

Dick Thomas

Eight years ago, Walter Linton walked into the BLM Phoenix District Office concerned about deteriorating range conditions on his Pipeline Ranch allotment, located 26 miles northwest of Wickenburg on the Alamo Lake Road.

Mr. Linton wasn't sure what to do or how to do it, but he did know that he wanted to reverse the downward trend in forage production and rebuild the 28,400 acres of Federal (BLM) land, 4,077 acres of state-leased land and 80 acres of private land into what a desert range should look like.

Listening intently were members of the BLM District staff, including Larry Hendrix, who was Lower Gila Resource Area Manager at the time, and Range Conservationist Jack Norris. They quickly realized that Linton's desire to improve conditions on his allotment matched perfectly with the BLM emphasis to develop effective grazing systems through Allotment Management Plans (AMP's).

What is an Allotment Management Plan (AMP)?

An action plan between the rancher and BLM designed around a grazing system for achieving pre-determined objectives to forage conditions and range trends. The plan includes: (1) An agreement between rancher and BLM; (2) Basic forage and soil data; (3) Statement of objectives agreed to by both parties; (4) Grazing system to achieve Plan objectives; (5) Constant monitoring and review of progress; (6) Improvements needed.

AMP's are action plans developed cooperatively between the livestock permittee and BLM aimed at providing long-term benefits through a grazing system. On the Pipeline Allotment, a rest-rotation system was used. This was accomplished by dividing the allotment into pastures by fencing, developing water and implementing other improvements.

The benefits of an AMP aren't confined strickly to livestock. Wildlife and other resources on the land also benefit from improved forage and water conditions.

From this casual meeting, the Pipeline AMP was born—eventually to become a "showcase" example of how an AMP can dramatically improve rangeland even in the harsh environment of the desert Southwest.

The history of the Pipeline Allotment dates back to the early part of the century when the Bullard brothers began laying a pipeline from Alamos Spring across this dry ex-

(Left) Looking out across the 32,557-acre Pipeline Allotment northwest of Wickenburg. (Middle) Arizona Game and Fish Department Chief of Game Management. Steve Galizioli and BLM Gila Resource Area Manager Dean Durfee discuss one of 18 quail guzzlers installed by BLM on the Pipeline Allotment northwest of Phoenix. (Right) Water for the allotment originates here at Alamos Spring.

panse of desert to a mine they were working in the Harcuvar Mountains. However, the plan proved too ambitious an undertaking and the brothers abandoned the project after laying only a few miles of pipe.

Walter Linton bought the Pipeline Ranch in 1971. He sold it in 1975, after the AMP had been implemented, to H.E. Vogt of Scottsdale. Later, it was again sold. This time to the present owner, Mrs. Elladean Hayes Bittner of Congress Junction, who shares the same enthusiasm as Linton and Vogt for the rest rotation grazing management system.

The confidence in the plan by these three owners is already bearing fruits of success. Both Mormon Tea (a shrub) and Bush Muhly (a grass)—the two key forage plants for livestock and wildlife on the allotment—have come back strong from an overgrazed condition. Livestock numbers, which were closely regulated as the three-pasture system was implemented, now have been built back to the precise number called for in the Plan... 138 head.

"The allotment has doubled its forage production since the AMP was put into effect, despite the fact that the Wickenburg area has suffered through four consecutive years of drought that didn't end until last winter," observes Dean Durfee, present BLM Gila Resource Area Manager.

Former BLM Area Manager Larry Hendrix shares Durfee's enthusiasm. He left BLM five years ago to manage the giant 235,000-acre ORO Ranch, northwest of Prescott. These were his comments on the AMP:

"I figured the cooperative attitude of the owners of the Pipeline Allotment made this a golden opportunity for showing that such a plan really can benefit a tough desert range. It worked so well that I carried the same concept with me to the ORO and immediately began putting in fences for a similar rest rotation grazing system."

He added that rest rotation principles looked just as promising to him as a rancher as they did as a BLM employee.

"You can't refute results," concludes Hendrix.

The AMP rest rotation system—as implemented on the Pipeline Allotment—calls for managing primarily for the "ice cream" plants of Mormon Tea and Bush Muhly.

"When you manage for these key plants, you are effectively managing for all forage," explains Durfee.

The grazing system calls for grazing one pasture all season long the first year, then grazing it a second year after seed has matured and dropped so that cattle can trample it into the ground and get the seed started. The pasture is given complete rest in order for seedlings to establish and to restore vigor in previously-grazed plants.

The prospects for wildlife look equally bright on the Pipeline Allotment. Durfee is planning construction of 18 water guzzlers, primarily

for quail and other small animals. Gradually, the range is providing for the harmonious production of both livestock and wildlife, with other resources also sharing in the returns.

The Pipeline Allotment and other successful AMP's are proving today what cooperative action by ranchers and BLM can accomplish. The Bureau's policy calls for accelerating AMP implementation in the future.

A History of Allotment Management Plans

The concept of an Allotment Management Plan, or grazing system, isn't new. The Forest Service had been practicing rest-rotation on an experimental basis for many years before BLM became interested.

In the mid- 1960's, a former BLM employee, Glen Fulcher, who had quit the Bureau to head up the University of Nevada Department of Agricultural Economics in the 1950's, returned to spearhead the development of AMP's. One of his first actions in taking over the BLM range program in 1963 was to hire Gus Hormay to pull the planning together and teach the concept of AMP's to Bureau employees and ranchers alike. Hormay was a pioneer in rest-rotation grazing and he proved the effectiveness of this particular type of system at the Berkley Forest Service experimental station and elsewhere.

Gus began touring the West, scheduling schools and seminars on how to work cooperatively with ranchers and in the implementation of allotment management plans. Initially, his comments were received with mixed emotions, but the proof of the pudding is in the eating. Once a few rest-rotation grazing systems were implemented on BLM ranges and forage conditions improved, support grew. Gus stressed that while rest-rotation grazing was one of the basic tools of an AMP, it wasn't necessarily the only way to go. Actually, deferred or even full-year grazing can be part of an AMP grazing system.

The principles of rest-rotation were best accepted in the northern states where rainfall is more prevalent, but—says Hormay—the basic physiology of plants is the same wherever you go and rest is essential for good plant growth.

While implementation of AMP's is not a guaranteed panacea for improving every range condition, they do reflect the concern of both BLM and the ranchers for establishing good management.

The public currently is demanding an accounting of range practices and livestock numbers. They also want assurances that wildlife, wild horses and burros are allocated forage, and that total resources on the land are being protected.

The Allotment Management Plans provide this assurance in a positive cooperative program that can benefit every use on the land.

Steps in Preparing An AMP . . .

1. The livestock operator (rancher) and BLM Range Conservationist tour the allotment and discuss basic objectives for improving forage.
2. Basic factors/range data and economic factors are related to this specific allotment.
3. Armed with this information, the Range Conservationist returns to his office to write up a proposed AMP.
4. The proposal is reviewed by other staff members and further input added.
5. Range Conservationist returns to the rancher and carefully goes through the proposal and makes whatever changes both feel are advisable.
6. After the plan is agreed upon by the rancher and BLM, the implementation begins. This can include additional studies, water development, fencing, corrals, etc. In rest-rotation systems, it means the separation of the allotment into self-sustaining pastures.
7. Annually, the Range Conservationist and the rancher review the AMP to see what adjustments are needed to best accomplish the stated objectives.

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Grazing Management Systems

Roger Mertens

If you were to eavesdrop on two serious range conservationists some afternoon you would probably hear such terms as South African switch back, short duration, intermittent, deferred, high intensity-low frequency, rest, etc. To the layman it might sound as if they were talking about last Monday night's football game. In reality, they are discussing some of the many livestock grazing management systems that have been developed and put into operation in the western United States.

To develop a proper grazing management system one must find out as much as possible about the area to be managed, establish objectives, and then understand and evaluate the basic principles of plant and animal management. Next, carefully select the best combinations of these principles which will accomplish the objectives and, of course, study and evaluate the results to determine if changes are necessary.

Before discussing each of these steps, let's first attempt to define grazing management systems. *A Glossary of Terms Used in Range Management*, published by the Society for Range Management, defines a grazing system as "A specialization of grazing management which defines systemmatically reoccurring periods of grazing and deferment for two or more pastures or management units." Other authors refer to systems as specialized plans, sequences of livestock grazing, or grazing formulas. However, for BLM rangeland management, a more proper definition would be a documented schedule of livestock grazing designed specifically to accomplish plant and animal objectives for a given area or allotment. I do not agree that grazing systems should be limited by requiring the area to have two or more pastures and I will explain why later.

Now, let's discuss each of the steps necessary to develop a grazing management system. We must find out and document as much about the area to be managed as possible. Most of this information is obtained by plain old communications—sitting down together and discussing the area. Additional information will be obtained by the use of field inventory crews.

Information needed to establish objectives and develop a grazing system should include but not be limited to:

1. Vegetation – Grazing systems are designed to properly harvest the vegetation resources. Therefore, the managers must know such things as production (usually expressed in pounds per acre), and conditions of the vegetation communities and the kinds, abundance, and growth requirements of the important plant species. This information will be used to estimate the grazing capacity for the area. Grazing capacity is defined as that portion of the vegetation production that can be removed annually while still providing adequate soil and plant protection. Range condition is an indication of the present health and production of a range area in relation to what that area is potentially capable of producing. Condition is usually expressed as either excellent, good, fair, or poor.
2. Animals – To ensure the needs of all grazing animals (wild and domestic) are provided for and evaluate their use of the area, we need to know what species of animals are present, their numbers, how long they use the allotment, and requirements of each kind for food, water, cover, and habitat area.
3. Water – The key to success for any grazing system is distribution and control of the grazing animals. Both of these are tied to the location, reliability, and quality of available waters.
4. Range improvement facilities – Location, condition, maintenance responsibility, and problems associated with each facility (fence, cattle guards, water wells, pipelines, seedings, etc.) must be documented. These facilities will play a major role in the success or failure of the grazing system.
5. Animal husbandry practices – Discuss with the livestock operators such practices as salting, herding, breeding areas, lambing grounds, type and quality of livestock, supplemental feeding, branding and weaning times, and trailing needs.

Developing Management Objectives

Following the information stage comes development of management objectives. In BLM's grazing management program, objectives are defined as what can be accomplished to resolve grazing problems through control, use, and manipulation of livestock and development of facilitating projects. The objectives should be reasonable, quantifiable, measureable with at least beginning and ending points, and capable of being accomplished within a rea-

sonable time frame.

Developing objectives for a grazing allotment can be simple or very complex depending on the situation and potential for the area being managed. Managers must thoroughly analyze the information collected and develop objectives that will first preserve and improve the vegetation and soils of an area while properly harvesting its resources. Livestock performance and production objectives can then be determined but they must not conflict with the resource objectives or adversely affect the success of the grazing management system developed.

Resource management objectives may include reducing soil erosion, producing additional forage for livestock and wildlife, and improving wildlife habitat. Livestock performance and production objectives may include increasing calf crops, increasing cattle numbers, and producing heavier calves. Remember, from the objectives, the grazing system will be developed to manage the allotment. Therefore, it is important that each objective state what will be accomplished and what areas within the allotment will be changed, the amount of change, and what plant species must be maintained or changed.

For the purpose of discussion, let's look at two examples: beginning with one where the allotment information indicates that the major livestock forage plants are producing well below their potential. In our hypothetical allotment, past grazing has resulted in a poor range condition with good quality forage plants greatly reduced in numbers throughout the allotment and replaced by less desirable species. Our objective may be to increase livestock forage production by 50% in the sagebrush/grass plant communities throughout the allotment. Plant species that should be managed are bluebunch wheatgrass, Idaho fescue, and bitterbrush. This objective should be accomplished within 15 years without any mechanical land treatment (plowing and seeding, burning, or spraying sagebrush with 2-4D) or within 5 years if approximately 20% of the major sagebrush areas in the allotment are treated.

An example of an objective to solve a livestock problem in this allotment would be to increase the mother cow herd by 25% within the next ten years while maintaining a spring-summer-fall grazing season. To accomplish this, forage production must be increased proportionately.

For our second example, information from the allotment shows vegetation and forage production is at or near potential, condition is good, and no wildlife or erosion problems exist. Therefore, the objective will be to maintain the status quo.

After objectives have been prepared, we must evaluate how we can obtain better livestock distribution to ensure as uniform grazing as topography and vegetation production will allow. This usually is accomplished by more year long water developments (wells, pipelines from storage tanks or pits, and deeper reservoirs). Also, better salting and herding practices can be employed by the operator and drift or management fences can be constructed.

It is now time to prepare a grazing management system. Each system is unique to the allotment being managed and must be adapted to local conditions. However, this uniqueness stems from a set of basic vegetation growth, use, and management concepts that must be applied in developing any management system. Managers must have a good understanding of these concepts which include:

1. Vegetation is a living renewable resource that grows and reproduces from moisture and nutrients obtained from the soil and air. Grazing animals obtain their nutrients from eating the vegetation.
2. Soil is the foundation for all plant growth and along with climate determines the amount and kind of vegetation potential an area will support.
3. Grazing animals are creatures of habit that prefer some plants over others, prefer areas that are close to water and where slopes are not too steep.
4. Grazing can be either detrimental or beneficial to plant communities.
5. Grazing animals are not barometers of range condition. Animals can maintain themselves and even improve on poor condition ranges because less preferred and undesirable vegetation species are nutritious.
6. Grass plants store food for future use in their roots and crowns (part of the plant immediately above ground). The majority of that stored food is used for growth following winter dormancy. After sufficient leaves are produced in early or mid-summer the plants start producing more food than is used. This excess food is stored for winter survival and to start the next spring's growth.
7. Grazing during the plants growing season removes the leaves and stems from which the plant produces its foods for future growth and seeds from which the species reproduces.
8. Grazing is a means of pruning the vegetation which, if done properly, will stimulate growth.
9. Grazing the same plant or plants year after year during the growing season will eventually kill those plants.
10. Continuous grazing for a long period of time by a single kind of livestock or wildlife may drastically change the vegetation community. For example, an area dominated by grass and continuously used by cattle may change to being dominated by undesirable shrubs.
11. Livestock production is best obtained during the spring and summer periods while the vegetation is green and growing.
12. Most desirable range vegetation is reproduced by seeds which are produced annually on seed stocks. Seeds must be planted and protection from grazing provided to the next spring's seedlings in order for a substantial amount of reproduction to occur.
13. Areas that will be grazed during the growing season should not be used until the range is ready for grazing. Range readiness is

normally determined when desirable plants have produced enough growth (usually 3-6 inches of new leaf growth) so grazing will not permanently damage the plant. Soils should also be dry enough to avoid trampling damage.

The managers must now decide which one or combinations of basic management concepts should be applied to accomplish the objectives for a given allotment.

As a start, let's first look at why our example allotment is producing well below potential. Like so many public land allotments in the West, it probably has been used by cattle for the last 75-plus years. Grazing starts each year in the spring as soon as snows are gone and the grass has "greened up" (about April 15) and continues through the summer into late fall or early winter when the hay is put up on the home ranch and snows start to come. Grazing capacities have been established by vegetation inventories twice during the last 30 years and grazing use adjusted accordingly. However, the only control or management on the livestock use has been water, salting, and some herding for better distribution. Therefore, grazing has occurred year after year on the entire allotment during the critical growth periods of the plants. Animals are free to select and use their most desired species first then less desirable ones after the preferred species are gone. Water is available throughout the allotment in the spring when intermittent streams are running and all reservoirs are full which provides for uniform distribution of livestock. However, as summer comes, the streams dry, some reservoirs are too shallow to hold yearlong water, and springs reduce their flow to a trickle. This leads to livestock concentrating on the remaining waters, causing heavy use on all forage species within one or two miles of each water site. As fall approaches, rains begin, temperatures cool, and livestock again use more of the allotment.

The result of all this is that cattle continuously grazed the desirable plants each spring causing some of them to die from the lack of food reserves. Little or no reproduction has occurred because seed stalks are not allowed to mature. The desirable forage species close to yearlong waters have been totally eliminated becaue of the combination of spring and continued heavy summer and fall use.

The management problem is how to increase production without adversely affecting the users of the allotment.

First, even though there have been two previous adjustments of livestock use to estimated grazing capacity, this may be necessary again, especially if the past 10 years of unmanaged use has again significantly reduced the proper grazing capacity below the current level of livestock use. Experience has shown that no grazing system will work if grazing use is occurring in excess of the proper grazing capacity. In fact, the system could actually accelerate the rate of decline of the vegetation community. This action will require a temporary reduction in the time and/or numbers of livestock using the allotment but, in the long term, if our objectives are accomplished, twenty five percent more livestock will be allowed to use the allotment.

Selection of Grazing Management Concepts

Next comes the selection of grazing management concepts to accomplish our objectives. We want to increase forage production. To do this, we must concentrate on the health and improvement of existing plants. One way to accomplish this would be to not allow any use of the vegetation until after the plants have produced and stored their maximum food reserves for each growing season. For most cool season grasses in the Rocky Mountain and Pacific Northwest states, this period occurs in early to mid-summer (July) while in the Southwestern states this period may occur in late summer (September).For our sample allotment, this date is July 10. Therefore, if our management team feels that this will accomplish our objectives within our time frames, we will implement a deferred system. Grazing is not allowed or deferred for a specified period of time during the growing season. For our allotment the deferment would be from the time spring growth begins until July 10. After the period of deferment, grazing will be allowed for as long as weather permits up to the amount equal to the grazing capacity. This system will allow for maximum improvement of the health of the existing plants which will lead to bigger and more productive plants while allowing maximum harvest of the production when it is least detrimental to the plants. Deferring use will allow some plants, even in the heavy use areas, to produce seeds. Then if they germinate the next spring, the new seedlings will be protected from grazing until mid-summer. This will lead to more production and improvement in the number of desirable forage plants.

The major disadvantage of this system is livestock operators must provide forage for their cows an additional three months each year. Also, livestock are not using the allotment when it is producing its best nutritional forage. For our first sample allotment, the operator cannot produce or obtain this amount of additional forage and one of his ranch objectives is to remove livestock from the private meadows as early in the spring as possible. Therefore, the deferment must either be reduced, which in turn will reduce the benefits or another system must be developed.

Next, the management team must look at the combination of concepts that will allow grazing to start in early spring but still increase production. "Range readiness" studies in our allotment show that April 15 is too early for grazing to start most years. However, because climatic conditions vary greatly from year to year, the actual date grazing will start should be determined in the field each spring jointly by the BLM manager and the livestock user. So now we have the start of another deferred system; defer grazing each spring until range readiness. This allows for grazing to begin without permanent damage to the vegetation and soil but does not allow increased production. However, it should stop any further deterioration if the area is used at or near the proper capacity.

In our second sample allotment where the condition is stable, a simple deferment until "range readiness" should be adequate. There is a place for one-pasture grazing systems on BLM lands and this is definitely one of these cases.

In our first sample, to increase production we must continue deferment beyond range readiness on at least one-third of the allotment each year. However, to avoid heavy spring use year after year, the area(s) that are used early in the spring should be deferred at least once during the next two years. So if we divide the allotment into three equal areas we would defer pasture number one the first year until July 10 and allow grazing in the other two after range readiness until July 10. Then grazing would occur in all three pastures for the remainder of the season. The second year pasture number two would be deferred and pastures one and three would be grazed in the spring and again after July 10 all three would be grazed. The third year the same process would occur but pasture number three would be deferred until July 10. We have rotated the deferment to all three pastures over a three year period and have developed a three-pasture deferred rotation system.

These systems provide livestock use in the spring, periods of deferment each spring for plant improvement, and flexibility to solve specific problems. This is also a good system to bridge the gap between continuous season long grazing and more complex systems that will accomplish our objectives faster.

Either in the beginning, or after a few years of deferred rotation grazing, it may be decided this system will not produce significant additional forage to satisfy our objectives. Therefore, we must further intensify our management efforts.

Instead of deferring until July 10, it may be necessary to defer grazing on part of the allotment until "seedripe." Grazing after this time allows the forage produced to be harvested and uses the grazing animals as a means of planting the mature seed. To help the seedlings survive the following spring, that pasture should be deferred for the complete growing season as a minimum and rest the complete year is desirable. This is referred to as a rest rotation system. Rest rotation is an intensive grazing system where one or more pastures of an allotment are deferred from grazing until "seedripe" one year, followed the next year by complete rest. This cycle of deferment and rest is rotated to all of the pastures in the allotment during the following years. It normally requires three or more pastures and livestock control is usually obtained by fencing.

The first year grazing can start at "range readiness" in pasture number one. Pasture number two will be deferred until "seedripe" of the important forage species (August 15) and then it is grazed while pasture number three is rested. The second year pasture number three or the pasture rested the previous year will be grazed in the spring while pasture number one will be deferred until "seedripe" and pasture number two of the deferred pasture in the previous year will be rested. The third year pasture number two is grazed in the spring, pasture number three will be deferred until "seedripe" and pasture number one will be rested. The fourth year pasture use and rest is the same as the first year.

Benefits from rest rotation systems include concentrating livestock during the breeding season, which produces more calves; spring livestock use occurring in a pasture that was not used the year before; livestock forced to use less palatable but just as nutritious plant species, which results in more uniform utilization; and plants receive rest for vigor, seed production, and seedling establishment. All of this leads to more production, better condition, and more stable soils. Pastures are also left unused each year for wildlife and emergency livestock use. Disadvantages are that these systems are usually more costly to get started because of the amount of fencing and water development and more labor intensive because of project maintenance and livestock control and movement.

The three systems, deferred, deferred rotation, rest rotation are the basic systems from which most specific management plans are developed. Modifiers include such things as more pastures, livestock moved when desired level of plant use is obtained, land treatment work in some pastures to stimulate growth and reproduction, and increasing or decreasing the kind, amount, and time grazing animals are using a given pasture or allotment.

Each grazing system developed is unique to, and adapted for, a particular allotment and will not normally work on another area. However, the principles of proper vegetation management should be applied to all grazing systems in whatever combination possible to accomplish the objectives.

Putting a new grazing management system in operation may take several years and a considerable amount of money. Additional water developments and, in some cases, fences must be built. Modifications may be necessary during years of drought or heavy insect use or because of fire or loss of water in some pastures.

The last step in developing our grazing management system is to evaluate our actions to see if our objectives are being accomplished.

Studies must be started as soon as possible to periodically collect information for this purpose. These studies will usually be nothing more than continuing to collect the same kinds of information used to develop the system. Vegetation production, condition and use data along with each year's animal use is combined with yearly climatic data to give the managers adequate information to tell if changes occurring are due to grazing management or weather. Also, scheduled evaluation of this data is necessary to determine if animal use and/or the management should be changed.

A proper grazing management system will have lasting positive effects on the rangeland, making it more usable and enjoyable for everybody.

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THE HISTORY OF Grazing on the Public Lands

By Paul Herndon

On one of his voyages to the New World, Columbus brought cattle to the Caribbean. A few years later, descendants of those animals were introduced into Mexico, and as Spanish settlers crossed the Rio Grande, their herds grazed on grassland in what eventually would become the State of Texas. There, that particular breed would become known as the Texas Longhorn.

When pioneers from the United States arrived in Texas, they found the Longhorns already established. These settlers had experience in herding cattle, and many became cattlemen in Texas. By the time of the Civil War, the ranching industry was a Texas tradition.

The Civil War was a major disruption for the Texas ranchers. Men returning from the war found their markets in ruin and the economy in disarray. Least affected by the war were the Texas Longhorns. These tough, resourceful animals had not only survived, but had multiplied.

In order to find new markets, the cattlemen made heroic drives to deliver their herds to railroads then being built across Kansas and Nebraska. Along the way they found a vast sea of grass that stretched from the Missouri River to the foothills of the Rockies, and their cows arrived at their destination fatter than they had been when they left Texas. Many of the ranchers and their cowboys were quick to recognize opportunity, and, in a few short years new livestock ranches had spread across the prairie all the way to the Canadian border.

This grassland was public domain, and rarely did a rancher bother to get title to the land where his cows grazed. By 1880 livestock grazing was at its zenith, and the concepts of "open range" and "free grass" had become a tradition throughout the West.

The western rancher and the cowboys who herded his cattle expressed the ultimate in rugged individualism. The law was whatever a man could enforce, and except for those "gentlemen's agreements" that one rancher made with his neighbors, grazing operations were unfettered and unregulated. Yet, even before the first trail herd moved out of Texas, the seeds of change already had been sown.

In 1862 Congress had passed the Homestead Act providing settlers up to 160 acres of public domain land if the settler would live on the land and bring it under cultivation. In time the homesteader would crowd the cattlemen off the more fertile prairie lands and force his retreat to less fertile and more arid lands still further west. In the end the stockman was left with land too poor to attract the farmer. Much of this land was fragile and, once its vegetative cover was depleted, its recovery could take generations.

It was also public land where one man's right to a given range was no better than anothers. Competition for grass was often bitter. This was especially true when the competition was between cattlemen and sheep growers.

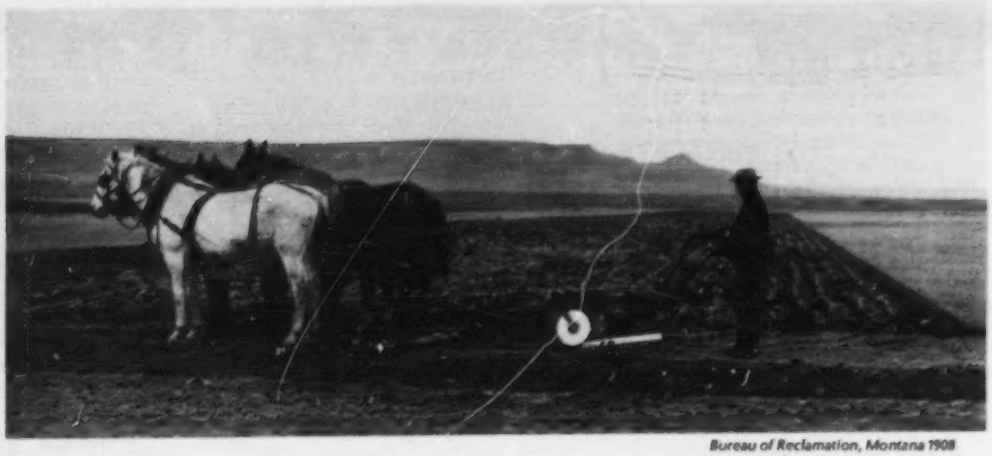
Sheep had come to the western range long after the cattle industry was already firmly established. There were few sheep west of the Mississippi River in 1840. It was not until the transcontinental railroads provided access to markets that sheep herding became a factor in the use of public lands.

By 1850 the estimated sheep population of the 17 grazing States was just over a half million animals. Many of these were grazing in small flocks on private land.

However, the sheep soon proved to be as well adapted to the western range as the Texas longhorn, and grazing sheep proved highly profitable. This made outside investment attractive. An absentee investor could buy animals, place them under the care of a herder working for hire, then sit back and wait for time to bring in a profit.

Unlike the cattleman who was forced to build and maintain a base of operations, the sheep herder could live in a wagon and allow his herd to drift to wherever grass and water were abundant. Eventually herds were crossing State lines and migrating from high to low altitudes.

By 1880 there were 19 million head of sheep in the 17 western grazing States. Cattlemen were becoming alarmed. Hostilities broke out between the two groups. Sheep and cows were killed as each side



Homesteaders claimed most of the best land for agricultural purposes, leaving the stockmen left with only that land too poor to attract the farmer.

Bureau of Reclamation, Montana 1908

raided the other's herds and flocks. Human life was lost as well.

The friction was rooted in a number of reasons and beliefs. Cattlemen complained that sheep carried oil in their hooves that repelled cattle. Sheep also cropped the grass shorter than the cow did, making it harder for cattle to graze behind them.

Whether cattleman or sheep herder, the system provided no incentive for the individual operator to consider what was good for the land. If one man's animal did not eat a blade of grass, he could be sure that another man's would. Overgrazing became the common practice. Then, during the winter of '86–'87, weather combined with overgrazing to bring disasters that no man had anticipated. John Clay, a co-owner of the VVV ranch on Montana's Wind River describes what happened:

> "By August it was hot, dry, dusty and grass closely cropped. Every day made it apparent that, even with the best of winters, cattle would have a hard time and tough cattle would only winter with a big percentage of loss... Our neighbors kept piling cattle onto the bone dry range...Thousands of other cattle were spread over the western and north-western country in the most wreckless way with no thought for the morrow.
>
> The Morrow was winter, one of the longest and deadliest in the history of the West, and in the spring of 1887, the piles of dead cattle were stacked like rotting cordwood in the corners of barbed wire-fences..."

That winter was a disaster from which western ranchers never fully recovered, but its lesson was largely unheeded.

The deterioration caused by overgrazing continued until the drought and depression of the 1930's convinced livestock operators that drastic measures would be needed to save the industry. Operators petitioned Congress to enact legislation to regulate grazing on the public range. Such a bill was introduced by Congressman Edward T. Taylor of Colorado.

In testimony on behalf of his bill before the Senate Committee on Public Lands and Surveys, Taylor described the condition of the western range at that time:

> "I might mention that when I was District Attorney of Northwestern Colorado, I prosecuted eight different murder cases at one term of court, the greatest number of them being the outcome of fights over the use of the range, mostly between cattle and sheep graziers...I call your attention to the fact that we are rapidly permitting the creation of small Sahara Deserts in every one of our western States today. We have such a condition in the southern parts of Colorado at this time, where there is nothing left but sand, which drifts back and forth, hither

Sheep, having different jaw structures from cattle, graze the land much closer than cattle do, leaving little vegetation in their wake. Sheep have been referred to as "range maggots" by cattlemen.

and yon with every breeze . . . "

The Taylor Grazing Act of 1934 brought the first regulation to the public range. To enforce the law and administer its provisions, Congress created the U.S. Grazing Service.

Present day critics of the Grazing Service often fail to consider the limited mission of the agency. It administered a single law for a single constituency—the western livestock operator grazing on the public lands. Yet under the circumstances, the Service accomplished much. Working through local advisory boards, the district graziers were able to allot specific portions of the Federal range to local livestock operators, and the itinerant herdsman, who had traditionally followed the grass wherever it could be found, lost his privilege to use the range.

We should also remember that the Grazing Service took over the responsibility to manage the Federal range only after extensive damage had already been done. Numerous reports dating from that period detailed the extent of the damage and sought to arouse public concern.

Even within the Department of the Interior there were many who failed to comprehend the magnitude of the problem or the corrective measures needed to reverse the trend toward deterioration. In his testimony on the Taylor Grazing Act, Interior Secretary Harold Ickes had assured Congress that he could administer the provisions of the Act for $150,000 per year.

While the Service had its greatest success in alloting specific portions of the range among local livestock operators, it found the problem of overstocking more troublesome.

In this, as in all other matters, the grazier was supposed to consult with advisory boards made up of local ranchers. These boards were expected to address the problem of overgrazing, but the economic well-being of individual ranchers, and, indirectly, that of the local communities in which they lived, was closely tied to the number of animals the rancher was allowed to run on the Federal range. This meant that the local advisory board member could have placed his friends and neighbors in financial hardship.

Many simply refused to make the hard decisions that were necessary to reverse the process of range deterioration that had been at work for so many years.

Here and there a courageous District Grazier tried to reduce grazing use over the objections of the local advisory board. In such cases he usually found himself under pressure from members of Congress and often from his superiors in Washington.

In addition to the politics of the situation, another factor prevented the District Grazier from effectively managing the Federal range: the lack of funds.

Secretary Ickes' optimistic estimate of how much money would be required to restore the range soon proved to be woefully inadequate, but Congress was reluctant to provide needed funds.

Despite many handicaps, the Grazing Service and local ranchers made substantial improvements in grazing practices. But there were many set backs. For example, during both World Wars I and II pressures for greater production of meat forced the Service to relax its restrictions on overgrazing, and livestock operators were issued emergency licenses to increase the number of animals they were allowed to graze on the Federal range. In most cases these emergency permits were continued long after the shooting stopped.

In 1946, Congress combined the functions of the Grazing Service with those of the General Land Office to create the present Bureau of Land Management. In the early 1950's the Bureau set a 10-year goal to bring grazing use into balance with the capacity of the Federal range to product forage.

Progress was made, but in their efforts to meet deadlines in adjudicating individual allotments, many District Managers made concessions to individual ranchers inconsistent with the hard realities of the land's ability to product forage. In other cases, they failed to allocate adequate forage to meet the needs of wildlife and, in almost every case, they failed to consider the forage consumed by wild or unlicensed horses or burros.

The readjudication of the range was complete by the mid-1960's. If judged by conditions prevailing at the time of the Taylor Grazing Act was passed, the accomplishments were monumental; if judged by the potential of the land, there remained much to be done.

A sheepherder's overhead on the range is low. Sheep graze so thoroughly and so slowly that the sheepherder packs his housing needs and lives on the range for weeks at a time. Modern shelters on the range run from horse drawn carts to recreational vehicles. This sheep herder, in 1940, is having his winter range license checked by BLM's forerunner, the Grazing Service.

As late as 1970 an Interior Department annual yearbook warned that 123 million acres of public rangelands were in fair to poor condition.

With the readjudication of the range complete, the Bureau turned its attention to more intensive management of individual grazing allotments. The goal was to work out Allotment Management Plans (AMP's) with each individual rancher. The AMP would be the blueprint for the management of the rancher's specific portion of the range. The plan set out seasons of use, and the number of livestock the rancher could graze on his allotment.

The AMP encouraged a scientific approach to the practice of livestock grazing.

Now other factors were starting to make their impact on the problem. Public officials were not alone in their concern over the condition of the Federal range. At long last apathy was giving away to public concern.

Articles decrying the condition of the range were staring to appear in the popular media. Coming on the heels of aroused public concern about the environment, reaction was widespread. In response to an alarmed public, Congress moved to meet the problems associated with the environment.

In 1969 Congress passed the National Environmental Policy Act (NEPA), and in 1974 a private conservation organization, the Natural Resources Defence Council (NRDC), brought suit against the Secretary of the Interior under that Act. At issue was the extent of BLM's compliance with NEPA's requirement that the Bureau prepare environmental impact statements analyzing the effects of its grazing program. The Bureau had, by then, prepared a single document called a programmatic environmental impact statement, covering its grazing program with the intent of gathering and publishing supplemental data to cover specific grazing areas. Bureau officials contended that such an approach met NEPA's requirements.

The NRDC argued that such a programmatic statement defeated the intent of NEPA and asked the Court to require site-specific statements. The Court ruled in favor of the Plaintiff's position. BLM agreed that it would prepare 212 statements in support of livestock grazing on specific segments of the Federal range.

In later negotiations with the NRDC, the Bureau was able to reduce the total number of environmental statements it would prepare.

While the Court's decision made certain that BLM would consider environmental impacts before reaching any decision about livestock grazing on public rangelands, the decision also imposed certain restrictions. In effect, the management of livestock is maintained at the status quo on given portions of the range during the time the Bureau is preparing an environmental statement.

Although public land legislation began with the Continental Congress during the time of the American Revolution, Congress had never enacted comprehensive legislation for the management of public lands. Instead, laws had been passed to meet specific problems within specified time frames. By the 1970's there were almost 3,000 separate pieces of legislation in force that had some effect on the management of public lands.

In 1976 Congress recognized the need for a complete overhaul of public land legislation when it passed the Federal Land Policy and Management Act of 1976.

This Act made minor adjustments in the Taylor Grazing Act, including a ten-year tenure for livestock operators, and changes in the portion of grazing fees that would be returned to grazing districts to finance range improvements. But the greatest impact of the new legislation was the reversal of the 200 year-old policy of disposal for all public lands.

Under a new policy of retention it became feasible for the Federal Government to act upon its responsibility to maintain and enhance the productive capacity of public rangelands. This responsibility was reaffirmed when Congress passed the Public Rangelands Improvement Act of 1978.

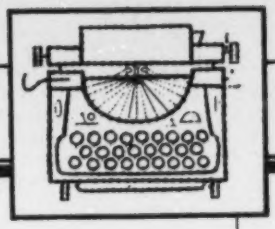
That Act authorized expenditures of $360 million for on-the-ground range improvements to be spent over the period of 20 years. It also mandated close cooperation between the Bureau and ranchers toward improvements of grazing allotments.

The optimistic expectations that followed passage of the Public Rangelands Improvement Act (PRIA) however, have yet to be realized.

Funds authorized by PRIA have not been appropriated by Congress in any of the three years since passage of the Act, and most likely will not be appropriated until the Federal deficit is brought under control. Consequently, BLM has been working to improve the efficiency and effectiveness of its current rangeland management programs. Under new policies, available funds and work effort will be concentrated in rangeland areas most in need of immediate management attention or where improvement efforts will product the greatest public benefits. Livestock operators and other rangeland interest groups will be asked to take an active part in improvement efforts and may contribute private funds towards improvements. If a person or interest group directly benefits from an improvement, they will be asked to finance maintenance of the structure. Since the public lands belong to the public, it seems natural to make them part of rangeland management.

Range managers agree that the fight to restore the rangelands to their potential has been a long struggle. Much remains to be done, but the important thing is that we are moving in the right direction—in cooperation with others concerned about the lands.

Paul Herndon is a Public Information Specialist in BLM's Office of Public Affairs, Washington, D.C.



News Highlights

O&G Filing Fees

The filing fees on oil and gas lease noncompetitive applications went up on Feb. 19, 1982. Both over-the-counter and simultaneous oil and gas (lottery) application fees rise from $25 to $75, and the rental on simultaneous oil and gas leases issued after Feb. 19 goes from $1 per acre per year for the ten year lease period to $1 per acre per year for the first five years of the lease and $3 per acre per year thereafter.

"Where Can I Buy Public Lands?"

This is a question due to be repeated with greater frequency in the coming months. Interest in Congress and the Administration in selling "surplus Federal land"has prompted a new initiative to identify unneeded Federal real property holdings that will be sold at fair market value to increase revenues to the U.S. Treasury. The President, on Feb. 25, issued an Executive Order establishing a Property Review Board and directives concerning the disposal of Federal real property. The Board will review prior disposals of surplus property to ensure it is being used for the purpose for which it was conveyed and also establish for each Executive agency an annual target amount of real property holdings to be identified as excess.

Your Public Lands will be the Bureau of Land Management's vehicle for informing the public of lands available through the Bureau.

BLM is developing a preliminary inventory of public lands presently identified for some type of transfer out of Federal ownership. For more information on these lands, contact the BLM State Office in the State where any desired Federal unimproved public land is located.

Wilderness Legislation Proposed

Interior Secretary Watt has proposed and Rep. Manual Lujan of New Mexico has introduced legislation entitled "The Wilderness Protection Act of 1982." The Act would withdraw all National Forest System and Bureau of Land Management wilderness and wilderness study areas within the lower 48 States from mining and mineral leasing that would require surface occupancy until the year 2000. One critical point is that the bill would allow the President, following his recommendation to Congress that a BLM wilderness study area is unsuitable for wilderness designation, to release the area for uses other than wilderness. The bill also sets Congress a two-year deadline for acting on BLM suitable recommendations pending before it. If Congress dosen't act in that time period, the lands are released.

Endangered Plant Booklet Offered

A pocket size field identification guide, Threatened and Endangered Plants of Alaska is now available from BLM's Alaska State Office. The booklet was a cooperative project between BLM and the U.S. Forest Service. Copies can be obtained by writing: BLM 701 "C" Street, Box 13, Anchorage, AK 99513.

Wild Horse and Burro Estimates Released

Current revised wild horse and burro population estimates show approximately 44,900 wild horses and 11,900 wild burros were on public lands as of October, 1981. Population estimates are updated biennially. In the 1980 estimates, 52,400 wild horses and 12,000 wild burros inhabited public lands.

Arizona Gets a Birthday Present

When the State of Arizona turned 70 years old on Feb. 12, one birthday present it received was 29,300 acres of public land. BLM transferred the land to the State, bringing the total public land transferred to the State within the last eight months to 86,888 acres. All of the land is in the Phoenix and Tucson areas and has high potential for urban or industrial expansion.

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Rights-of-Way
Meeting the Nation's Needs

By Jack Reed

Our Nation's population center, shifting westward into the mountain States and southwestern sunbelt, is increasingly in need of more energy sources to fuel its electrical power generating requirements, including the heating and cooling of its homes, schools, factories and businesses. Many of the contemplated electric generating sources can best be built on public lands administered by the Bureau of Land Management (BLM).

Approximately 374 million acres of public lands are scattered over the western States and Alaska in such places as isolated canyons, arid deserts, broad treeless valleys, and bare mountain tops.

Energy companies are looking to the public lands to provide rights-of-way as well as sites for energy facilities. These would include haul roads and railroads for surface traffic, overhead electrical power transmission lines, and below surface use for pipelines transporting oil, gas, and coal slurries. Other energy sources on public lands to be eventually tapped include; geothermal steam, oil shale and tar sands, and even such seemingly exotic sources as solar power and wind energy.

Each year, hundreds of right-of-way applications are processed by BLM. Even if no BLM lands are involved, BLM issues the right-of-way grant when the right-of-way crosses lands of two or more Federal agencies at any given time.

Right-of-way applications are for a wide variety of proposals such as oil shale production, coal gasification, oil or natural gas pipelines, electric transmission lines, coal-fired electric generating stations and coal slurry pipelines.

Major energy projects sometimes involve conflicts with national parks or wilderness areas because of air quality, endangered species, competition for water in the arid West and, other controversial or sensitive issues.

Because of heavy socioeconomic impacts, State and local governments frequently need to be involved in a right-of-way project. Many requests for permits or rights-of-way involve land in more than one State.

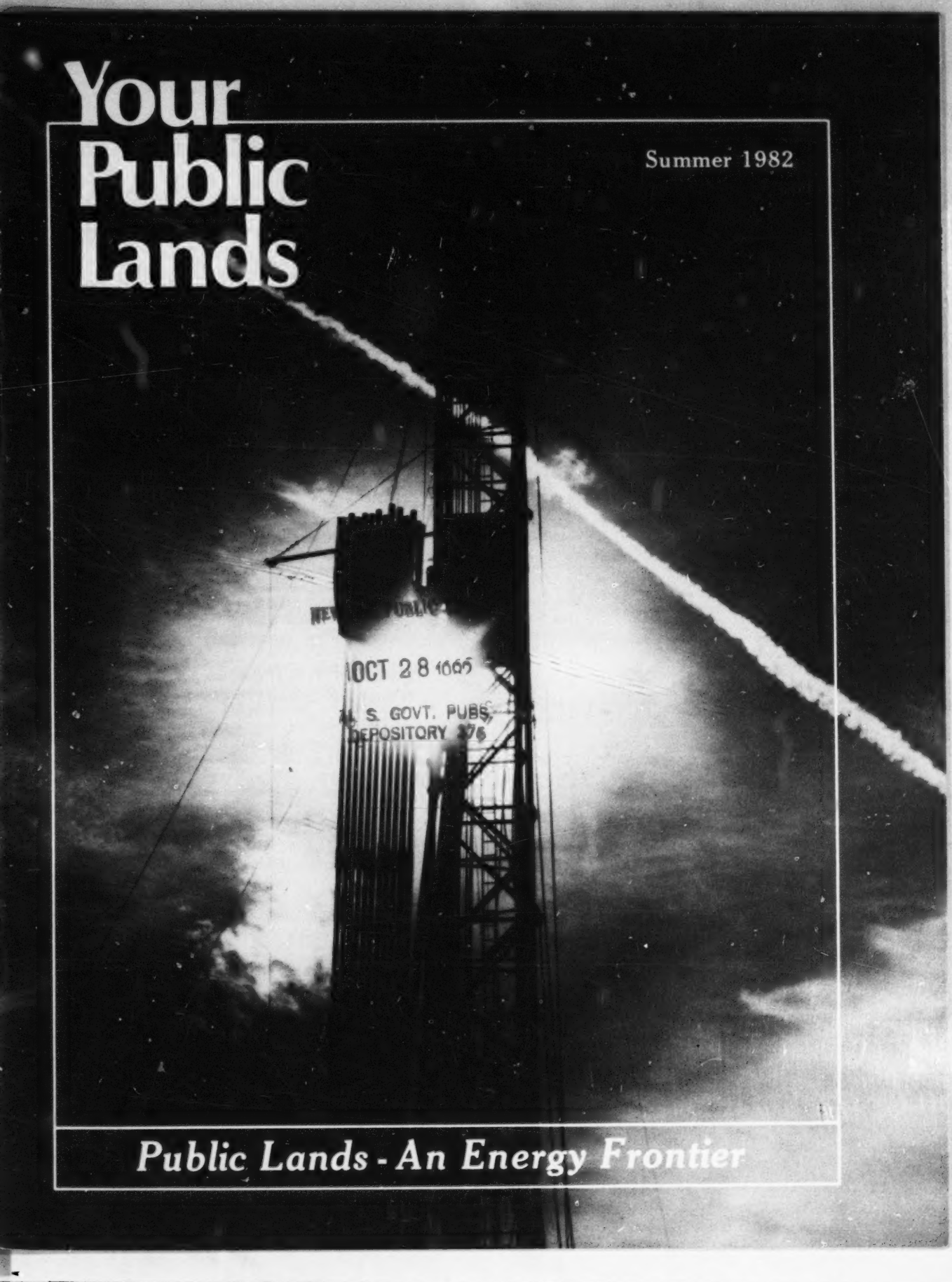
Under requirements of the National Environmental Policy Act of 1969 (NEPA), Government actions that will significantly affect the environment require a study of the proposal in an environmental impact statement which examines the proposed actions, lists alternatives with probable consequences, and details possible mitigating measures. Such statements are issued in draft form for public review. Views of citizens, special interest groups, and local and State governments are then incorporated into a Final Environmental Impact Statement which contributes to a decision whether to grant or deny the applicant's request.

Within the past two years improvements have been made which have shortened the permitting process by as much as 50 percent. Further proposed changes include using new techniques or management procedures which would further reduce processing time. Even a few weeks during BLM's role in an energy project can mean large dollar savings to the customer.

Jack Reed is a Public Information Specialist in BLM's Washington, D.C. Office of Public Affairs

Your Public Lands

Summer 1982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Public Lands - An Energy Frontier

Your Public Lands

Summer 1982
Volume 32
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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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Please give appropriate credit.

Our Nation's Energy Resources

This issue of *Your Public Lands* is devoted to discussion of the vast wealth of energy resources found on our Nation's public lands and how we in the Bureau of Land Management (BLM) are managing these resources for the benefit of all Americans.

When I came to Washington in May of 1981, it was because I believed I could help achieve President Reagan's "New Beginning." In BLM this means that we must develop our vast energy, mineral, and other natural resources in a balanced economic and environmental manner, while rebalancing the relationship between the Federal and State governments.

In the past year, we have streamlined the Outer Continental Shelf oil and gas leasing process to meet Secretary Watt's goal of offering over one billion acres for lease within the next five years. This will give industry a broader choice in determining exploration strategies, and continue the excellent environmental record of the OCS program. Last year Federal offshore oil and gas leases produced 283 million barrels of oil and 4.8 trillion cubic feet of natural gas. I'm proud to say that we have protected that environment.

Secretary Watt's recent transfer of all OCS activities to the Minerals Management Services has taken us out of the offshore oil business, but we can be justifiably proud of our record, both financially and environmentally. Just since fiscal year 1975, we earned for the Treasury over 28.2 billion dollars as a result of offshore leasing, bonus payments, rents and royalties. And, this has been a tremendously successful program in terms of environmental safety.

After a ten-year moratorium on Federal coal leasing, we have completed the sale of two coal leases this year, the largest sale of Federal coal leases in American history in Wyoming and Montana. Months of close cooperation between the Federal government and the States of Wyoming and Montana in what Secretary Watt termed "... a fine example of our 'good neighbor' policy ..." led to the success of this sale.

We are developing options for an oil shale leasing program, which will allow market forces to determine the timing of commercial oil shale development on the public land. The market will guide decisions about when and how much shale oil will be produced. Industry can then provide the government with information on where the best possibilities exist for leasing. As this information comes in, we will probably extend the prototype leasing program to cover other minerals recovered as oil shale by-products. At the same time, we are studying the possibility of a permanent leasing program in Colorado, Utah and Wyoming.

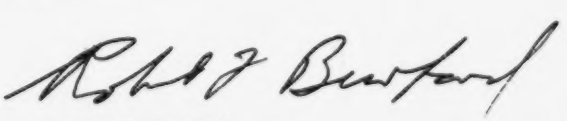
BLM is the second biggest income source in the Federal government, right behind the Internal Revenue Service. When you're number two, you're supposed to try harder, and we do. I intend to follow an aggressive leasing policy and with good reason. Just look at the energy resources found on the public land:

- 148 billion tons of coal—34 percent of the national total;
- 1.7 billion barrels of proven reserves of crude oil;
- 9.8 trillion cubic feet of proven reserves of natural gas;
- 1.6 trillion barrels of in-place shale oil—80 percent of the national total; 600 billion barrels of this is recoverable by todays technology;
- 65 percent of the nation's known geothermal resources;
- 90 percent of the nation's known tar sands deposits; and
- 35 percent of the national uranium reserves;

and these are only the *known* available energy resources.

We Americans hold the keys to a great energy storehouse. We need to begin developing these resources in an orderly manner to alleviate not only our dependence on foreign sources of energy, but also a severe economic plight caused, to a great extent, by our needs to purchase so much oil from abroad.

In order to achieve our goals, I intend to manage the natural resources on the public lands in a more balanced manner. To do this, I will concentrate on bringing the human being back into the total environmental picture. In addition, I want to assure people living in the impacted areas of energy development that BLM will work with the State and local governments as we proceed toward a "New Beginning."

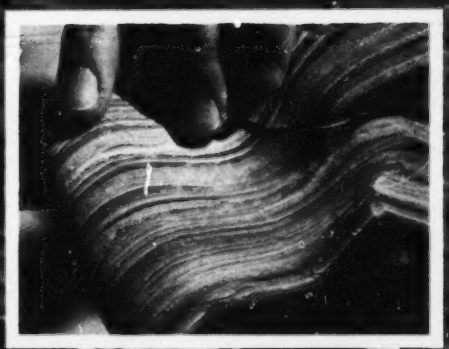


Robert F. Burford
Director of the Bureau of Land Management

Oil Shale

An Infant Synthetic Fuels Industry On Hold

By Bill Tarpenning



We live in a society powered to a great degree by oil. Its future availability is our most pressing energy problem. No other fuel source will power most of our automobiles, trucks, planes and ships this century. Yet, with limited domestic reserves, and uncertain foreign supplies, we must develop alternative sources of liquid fuels.

One such alternative—shale oil—could provide significant quantities this century and stretch its benefits far into the 21st century. The public lands of Wyoming, Colorado and Utah are warehouses of oil bearing shale. Technology exists for recovering oil from shale on a large scale production basis, compatible with our existing fuels such as heating oil, gasoline and jet aircraft fuel.

Americans learned about oil shale from the Ute Indians who called it "the rock that burns". Pioneers crossing the Rocky Mountains greased their wagon wheels with this viscous substance. By the middle of the 19th century a small industry had grown up refining kerosene from shale oil.

The discovery of liquid petroleum at Titusville, Pennsylvania in 1859 halted the infant shale oil industry for a time.

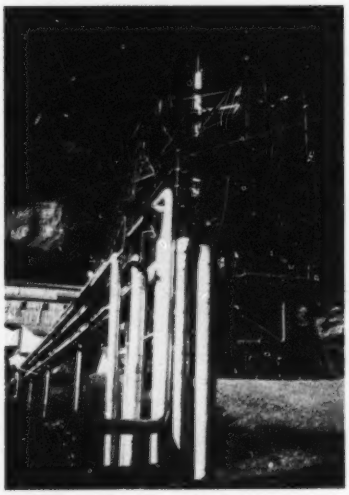
The internal combustion engine, and its use in Henry Ford's Model T's caused an oil rush and the forming of more than 200 companies to exploit the shale oil-rich Green River Formation of Colorado, Utah and Wyoming. Boom and bust was again the story as liquid petroleum was found in east Texas.

The global conflict that was World War II with its massive consumption of petroleum, caused concern in Congress for our supplies of oil. They passed the Synthetic Liquid Fuels Act to foster the development of an alternative, in which shale oil was to play a significant role. Following WWII, the discovery of gigantic supplies of liquid petroleum in the Middle East again eroded the potential market for shale oil.

Dwindling U.S. oil production, accompanied by the uncertain political situation in the Middle East in the 1970's, again turned the eyes and dollars of the energy industry to the Rocky Mountains and their vast deposits of oil shale.

The focus of the "off again, on again" oil shale interest is an organic compound called kerogen. Formed from deposits that settled to the bottom of prehistoric lakes about fifty million years ago, kerogen is a rubbery substance chemically bonded to the rock. It will not flow, but when heated to 900 °F, the kerogen yields a premium synthetic crude oil resembling conventional petroleum with a low sulphur content.

There are two major methods used for processing of the rock to get it to yield its oil. Above-ground processing is just that. Rock is mined and carried to a retort aboveground where it is heated and the oil extracted. The in-situ process retorts the shale while still underground.



(Left) This wall is a repository of oil bearing shale.
(Small inset left) Closeup of "the rock that burns." The dark veins in this shale rock contain the oil which can be processed out.
(Above and right) Oil shale rock is mined and carried to this aboveground retort where, when heated, it yields its oil.

The American people are co-owners of about 80% of this oil shale, as it is found mostly on public lands administered by the Bureau of Land Management. Approximately 600 billion barrels of shale oil are estimated recoverable by existing technologies.

In 1971, Interior Secretary Rogers C.B. Morton announded a prototype leasing program to stimulate the development of oil shale technology by private industry, and develop environmental safeguards and management expertise for oil shale leasing and supervision.

In 1974, six tracts were offered for lease and four oil shale leases were issued under a prototype program. Development of the two leases in Colorado is proceeding, using modified in-situ technology. However, one Colorado tract would use open pit mining and surface retorting if offsite disposal for the residue could be obtained. The two tracts leased in Utah have not been developed because of legal conflicts over land ownership and mining claims. To date, there has been no shale oil production from any of these Federal leases.

Although there is no demonstrated technology for commercial production of oil shale, several experimental projects have been developed including the Anvil Points oil shale facility near Rifle, Colorado. There are oil shale projects in Brazil and Australia, and China is looking into oil shale development.

With the international price of crude oil dropping and the glut of crude on the market, there does not appear to be a rush to establish production of oil from shale in large quantities. When that time comes, however, the Bureau of Land Management will be ready. Even now, it is formulating new policies for additional prototype leases and tracts could be offered as early as 1984 under a permanent program.

In the meantime, isn't it nice to know that you own all that oil?

Bill Tarpenning is Acting Chief, BLM's Branch of Communications and Publications Services, Washington, D.C.

Coal Leasing
Decisions and Impacts

By Bruce P. Van Haveren

The demand for energy mineral resources is projected to increase as traditional energy sources, such as oil and gas, become limiting or prohibitively expensive. Any exploration or development of new energy sources will undoubtedly involve environmental conflicts. Coal is one such energy mineral which promises to play an important role in the Nation's future energy supply mix. Coal will be a key factor in the U.S. energy policy in the next 30 years. Coal is forecasted to be an interim energy resource, serving to replace dwindling oil and gas supplies and tide us over until more sustaining energy sources, such as solar and nuclear, are more fully developed and accepted by society.

The Federal government owns 66 percent of the coal resources in the western U.S. Of this amount, 41 percent of the acreage is managed by either the Bureau of Land Management or the Forest Service. Thus, the Bureau of Land Management has a vested interest in the post-mining land use of a large portion of the lands overlying the Federal coal estate.

Policies governing Federal coal leasing were found to be inadequate in a 1970 BLM study which concluded that Federal coal production was declining even though the amount of coal under lease was increasing. The Secretary of the Interior imposed an informal moratorium on leasing in May 1971, followed by a formal moratorium in February 1973, at which time he announced his decision to establish a new coal leasing policy. The new coal leasing program was altered by statute and halted by litigation.

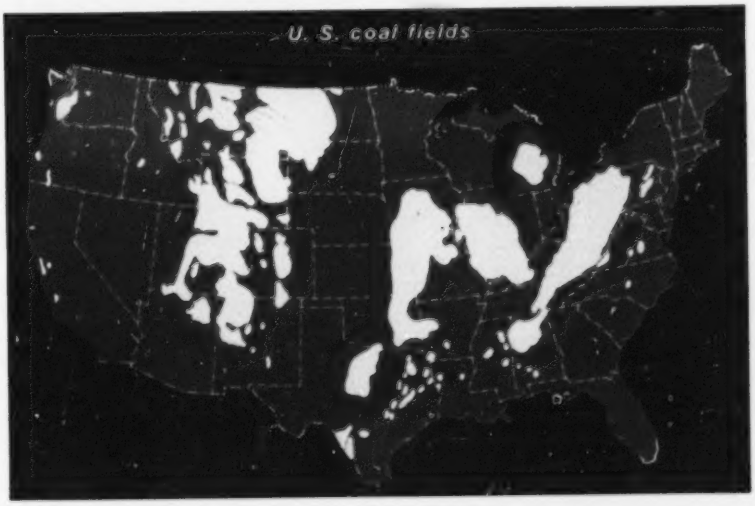
Debut Of A New Federal Coal Management Program

The Secretary of the Interior's new coal management program has been implemented. The goals of the new program are to (a) employ land-use planning and effective enforcement of environmental laws to assure that Federal coal is committed to production and produced in an environmentally acceptable manner, (b) assure that sufficient quantities of Federal coal are produced to help meet the objectives of a national energy plan, (c) assure that Federal coal is produced in an economically efficient manner with a fair economic return to the United States, and to (d) consult and cooperate with the State governments in planning the leasing and development of Federal coal.

Initially, potential coal leasing areas are reviewed to determine which lands are unsuitable for all or certain types of coal mining. Next, BLM delineates, selects, and ranks lease tracts for each regional coal leasing scenario. BLM also is responsible for preparing the regional coal environmental impact statements.

The Land Manager's Role

The BLM land manager, having responsibilities for potential coal leasing areas, must ultimately decide whether or not to lease coal. He or she must determine, before issuing the lease, that coal resource development is the best use of the land for that particular place and time, and that impacts upon competing resources can be mitigated. The general land-use plan covering the lease area provides a general guide for determining the post-mine land use, but the land manager must be assured, before the lease is issued, that the post-mine and land-use objectives can be met.



Post Mining Land-Use Decision

For Federal coal lands where the surface is privately owned this is a default decision, since BLM cannot dictate a post-mine use of land in private ownership. But where both the surface and coal are Federally owned, the land manager has the option of choosing a better use of the land by altering the mix of resource capabilities during reclamation. This choice may, in fact, be the wiser. According to the National Research Council, it may be impossible to duplicate pre-mine conditions within any reasonable timeframe. If the manager opts for a new resource management mix, then specific reclamation goals must be communicated to the appropriate regulatory agency and to the developer.

Reclamation

BLM, through its coal program and in cooperation with the US. Bureau of Reclamation, has conducted over 40 resource and reclamation potential studies in seven western States. These studies gathered data and interpretations on soil, water, and revegetation potential for the land manager to assist in making coal leasing decisions.

The results of these studies have been used extensively as supporting material for the preparation of the regional coal environmental impact statements recently completed by BLM. These reports have been used as guidelines for developing leasing stipulations. Most areas in the West can be successfully reclaimed, given enough time and attention to sound reclamation practices. The responsibility for determining reclaimability was assumed by the Office of Surface Mining in the Department of the Interior.

Coal Hydrology

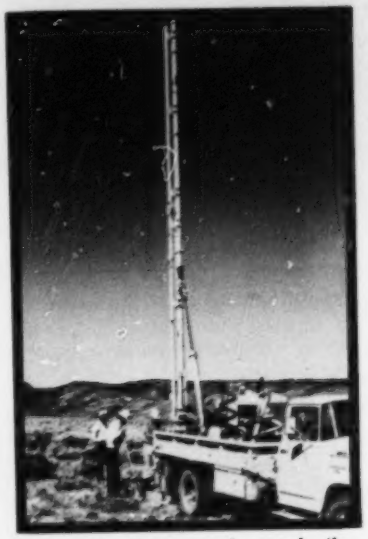
The BLM and the U.S. Geological Survey (USGS) cooperatively embarked on a coal hydrology program in 1974. This program was designed to increase the knowledge of hydrologic processes in the Federal coal regions and to build a capability for predicting potential hydrologic impacts from coal development.

Coal mining in the West could have severe impacts on hydrologic systems and upon the people who depend on those systems for their water supplies. Mining could upset watershed equilibrium by increasing the intensity and frequency of flooding and could damage groundwater systems used as a source of water. The majority of petitions against BLM leasing decisions have been based on hydrologic concerns.

To help answer hydrologic questions, BLM has funded the USGS to conduct studies in the Fort Union, Powder River, Green River-Hams Fork, Denver-Raton Mesa, San Juan River, Western Interior, and Appalachian Federal coal regions.

The studies are performed in large river basins containing Federal coal. They are designed to provide baseline hydrologic data. Area hydrologic investigations are conducted on smaller basins (25 to 130 square kilometers) where BLM feels that some coal leasing will most likely occur. Hydrologic surveys are performed on specific coal lease tracts or on study areas having a high leasing potential. Site-specific studies may also be conducted in connection with special studies of resource conflicts involving water resources and lands suitable for coal mining. Topical hydrologic studies were initiated in some areas to answer specific questions about hydrologic process-response functions and to improve our general knowledge of the hydrology of the coal regions.

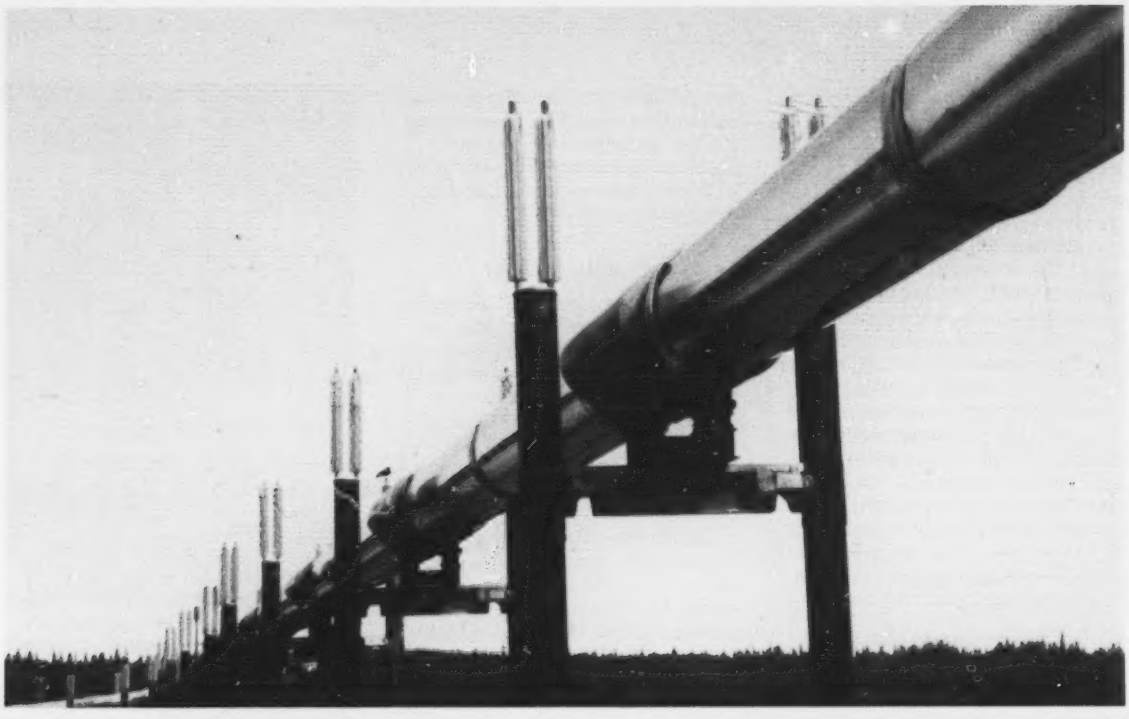
Through its energy and minerals program, the Bureau of Land Management has collected, since 1974, a wealth of technical information about potential resource impacts from coal leasing. As a result of these technical investigations, BLM managers now have supporting data upon which leasing decisions can be made.



BLM gathers data on geology and soils from potential coal leasing sites.

Baseline hydrologic data are being collected in all Federal coal regions.

Bruce Van Haveren is a Hydrologist and the Coal Coordinator for the Denver Service Center of the Bureau of Land Management, Denver, Colorado



AMERICA'S

ARCTIC LIFELINE

Story and photos by
William J. Robertson

In the farthest reaches of the United States, a narrow thread of land winds from Alaska's heartland through the rugged Brooks Range to the vast open spaces of Alaska's North Slope. Often the subject of bitter disputes of land ownership, life styles and uses, this stretch of Federal land, called the utility corridor, provides a vital link to Alaska's vast energy resources.

At its northern end lies the Prudhoe Bay oil field and, far to the west, huge coal deposits that could supply this nation for centuries. Both offshore and onshore exploration continues to reveal more fields of gas and oil. Many of America's strategic minerals are to be found throughout the area. These and other resources, when tapped for use, will pass through the utility corridor.

The strip of land is far more than a passageway for energy resources. Recreation, forest products, minerals, range, watershed, commercial uses and wildlife each play a part in the tug-of-war for the land. Environmental concerns, present land ownerships, mining interests, traditional use by Native cultures and historical values all have their effect.

The land was withdrawn by Public Land Order 5150 in 1971 for a transportation and utility corridor across Federal lands linking State-owned lands 60 miles south of Prudhoe Bay to State-owned lands 35 miles north of Fairbanks. About 336 miles long, the corridor varies from six to 24 miles in width and contains about 3.5 million acres. Surrounded on both sides by lands withdrawn by Congress for National Parks and Wildlife Refuges, the corridor presents the only access through the entire 600 miles east to the west sweep of Alaska's Brooks Mountain Range.

Within the corridor, the four-foot diameter, 800-mile-long, trans-Alaska pipeline meanders on its way to the tidewater terminal at Valdez. Pumping 1.5 million barrels of oil per day, the line has five pump stations and related housing facilities within the corridor's boundaries. A large diameter pipeline to bring natural gas and associated liquid products is proposed to be constructed by 1986. It too, would lie within the corridor. Two nearly abandoned gold mining camps are also within the area. A State-owned and maintained road runs the corridor's entire length. In adjacent areas, mineral deposits of tungsten, copper, lead, zinc, and uranium are buried. If developed, access from the corridor will have to be provided.

Proposed at one time as a cultural park, the corridor is undeniably beautiful. Traveling the graveled Dalton Highway, built for the con-

struction and maintenance of the oil pipeline, you enter the corridor at Washington Creek, just north of Fairbanks. The land is heavily wooded over gently undulating hills. Occasionally, rocky spires or "granite tors" punctuate the landscape and provide a challenge to climbing enthusiasts. Farther north, an inclined bridge spans the awesome Yukon River and is truly the gateway to the Arctic. Open to commercial traffic since 1975, the road north is opened to the general public only in the summer. North lie the approaches to the Brooks Range which divides the North Slope of Alaska from its Interior. The corridor and the road are both swallowed up in the immensity of towering peaks, vast snow fields and endless skies. Geologic patterns of rock and soil tell of thrusting upheavals in eons past. Tumbled and rolling in a jig-saw of never ending patterns, the cliffs drop precipitously to the narrow valley of Atigun Pass. All along the way, names such as Old Man, Bonanza Creek, Prospect, Gobler's Knob, and Coldfoot stand out on the map and only make one wonder of their origin. Crossing the continental divide is passage into another world. The valley of the corridor, stretching to the Arctic Ocean, is flat, treeless—a barren wasteland, or so it would seem. But wildlife is everywhere and the frozen tundra abounds in plant species adapted to this rugged environment. Over your shoulder is the omnipresent oil pipeline, beautiful in its own way, carrying the life-blood of the Nation.

Land north of the Brooks Range is a storehouse of energy which supplies this lifeline corridor. The Prudhoe Bay oil field now supplies nearly 10% of the nation's energy. The proposed gas line will provide still more energy. Additional oil and gas fields are now being tapped and with the National Petroleum Reserve in Alaska, newly opened to exploration, the U.S. outlook for petroleum reserves continues to improve.

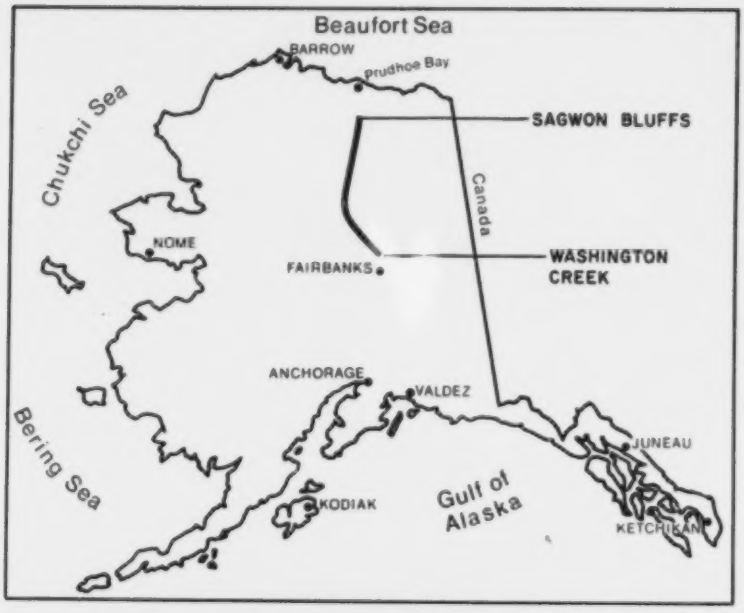
Coal is the real nest-egg. It is estimated that over one trillion tons of bituminous and subbituminous coal reserves exist on Alaska's North Slope. This is enough to supply the U.S. energy needs for 300 years.

Energy reserves are one thing, getting them out is yet another. Even hardened Alaska sourdoughs describe the North Slope climate as "terrible." The permanently frozen subsoil supports a thin layer of vegetation that thaws in the summer to a spongy, water-soaked mat interspersed with innumerably small water-filled pot holes. These provide a breeding ground for the hordes of mosquitoes that rise in clouds whenever the wind is calm—which is not often. Over the arctic ice cap, there is almost always a wind blowing that is cold and moist in the summer. Overcast skies or low, dense fog are common. In winter, the five months without sunlight added to the intense cold, wind and blowing snow make the North Slope an inhospitable place. Workers are seldom without heavy, down clothing, winter or summer. They face constant breakdown of equipment. Permanent roads, except in areas of long term activity, are nonexistent. Travel is by air and subject to the hazards of low visibility, darkness and severe weather.

Heavy equipment is moved in

(Left) The valley of the Corridor abounds in plant species adapted to this rugged environment.

(Right) The trans-Alaska pipeline takes a zig-zag pattern through the corridor for earthquake protection and thermal expansion and contraction.

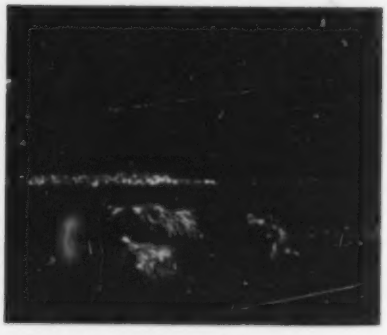


winter over temporary snowroads constructed of snow and ice or by use of low-ground pressure, all-terrain vehicles. All surface activities are by permit and closely monitored by BLM to ensure surface protection while allowing industrial development.

Development activity on Alaska's North Slope is orderly, but somewhat frantic.

It was recognized early in the development of the Prudhoe Bay oil field that the corridor would highlight a number of conflicting interests. It was a narrow piece of Alaska real estate abounding in natural resources—land dedicated to transportation and utility uses and land subject to many public and economic demands. Recognizing this potential for conflict between varying land uses, the Bureau of Land Management, in 1972 embarked on an extensive land use planning effort for the corridor. The plan was to establish a rational method of land use, providing for multiple use, when possible, and maintaining high standards of environmental quality.

After several drafts, and review by numerous State and Federal groups, the document was pub-



Grizzly bears make their home in the Utility Corridor along with wolf, caribou, red fox and other wildlife.

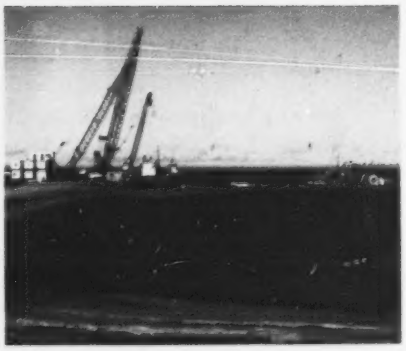
lished March 1, 1980. One significant feature of the plan is a provision for service facilities along the Dalton Highway. Even if the road is open only to industrial use, the need will always exist for service facilities. These could be located randomly along the corridor, depending on projected use. An alternative was to cluster facilities for all uses at a few planned locations or nodes. Once areas were selected, public interest was high to provide commercial service facilities.

The BLM will soon issue the first two long-term leases for development in the corridor. Other activities are expected to follow. Population is growing in the service areas. An application for a school site has been submitted for the area in the Yukon River. A large landing site has been proposed for the same general area.

To the jaundiced eye of the city-dweller, development is commonplace, but in a land where only five years ago there was none, the present activity is like a modern day gold rush—only this rush is being accomplished in an orderly manner. Because the corridor has become a rallying point for political interests, industrial use, recreation use and Native interests, close cooperation between all interests has been a vital element in planning.

Development and use of the corridor land will doubtlessly escalate in the years to come. New energy discoveries will be made, critical minerals will need to be extracted; and, the public will have to be served in their needs from the public lands. A land use plan is only the first step in providing these needs. The next step is to implement and carry out objectives and goals identified in the plan. The test of a suitable plan is its ability to provide the desired effects in a timely and efficient manner and at the same time protect the natural values of the land involved. It is not an easy task and not all will be satisfied completely. But failure to plan and to grow with the activity in the corridor can only cause a piecemeal result. The very resource that is to be protected will suffer from hesitancy and failure to act in a timely manner. BLM will continue to direct activities on the public lands in the corridor using the land use plan as a guide. The planning system is flexible and allows the land manager to use discretion on activity decisions. As situations change, the plan must be able to change also.

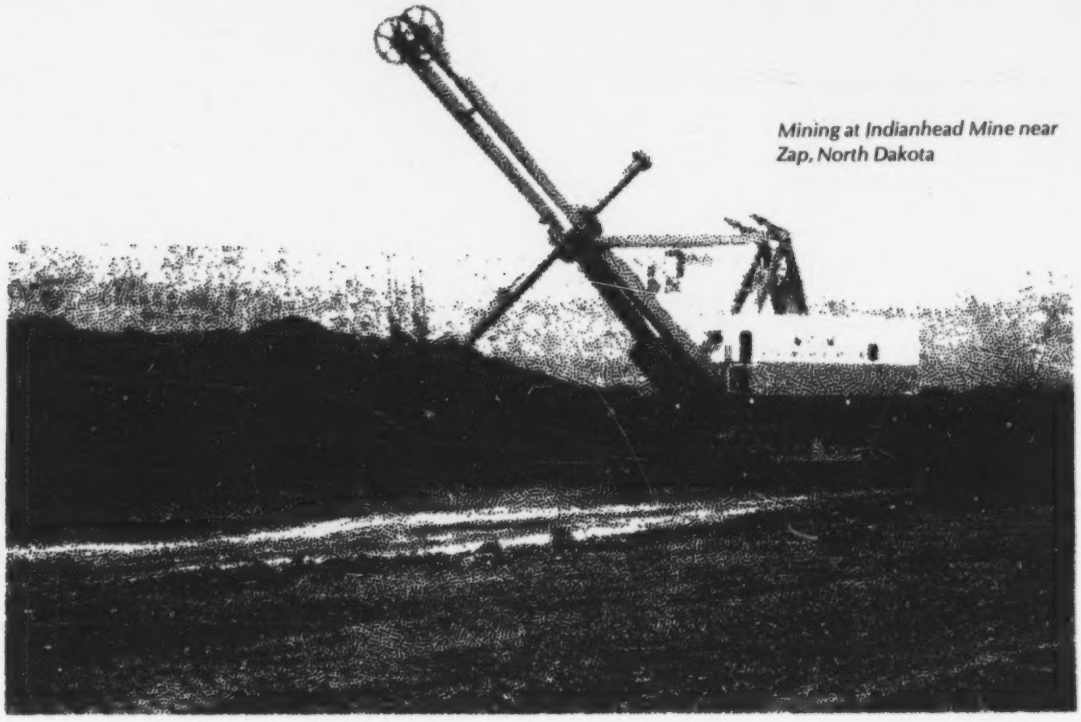
The utility corridor will continue to be the lifeline for the Nation now and for the foreseeable future. The challenge to BLM land managers is to provide for this and to use wisely the land management concepts and mandates that this Nation now demands of its Federal landlords.



(Above) The pipeline is set on vertical support modules to protect it from permafrost in this inhospitable environment.

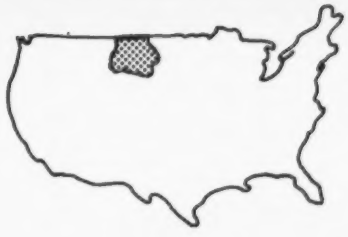
(Below) Construction activity at Prudhoe Bay oil field which lies at the northern end of the Utility Corridor.

William Robertson is Chief of Public Affairs in BLM's Fairbanks, Alaska District



Mining at Indianhead Mine near Zap, North Dakota

Fort Union Coal Region



By Jackie Olson

Early homesteaders near Zap, North Dakota, probably never dreamed that coal mined near their farms would one day provide electricity to homes as far away as Illinois.

Today, coal from the Fort Union coal region of eastern Montana and west-central North Dakota supplies power to parts of the midwest. Nine mines and seven power plants operate now, and BLM's Fort Union Regional Coal Team is planning for future development by offering Federal coal for lease next year.

Fort Union is one of 12 Federally-identified coal regions in the United States, and holds more than 11 percent of the recoverable coal in the West. The region contains more than 100 beds of lignite ranging from a few inches to more than forty feet thick.

The region, named for a fur trading fort near the confluence of the Yellowstone and Missouri Rivers, has a rich and colorful history. Fort Union, built in 1828, served as headquarters for a branch of John Jacob Astor's American Fur Company. The fort was used as a base to crush competition from other companies. In violation of Federal law, a small still was smuggled into the fort to turn corn into liquor. The liquor was used to bribe the Indians from selling their furs to the rival Hudson Bay Company. However, when the government discovered the still, Fort Commander, Kenneth McKenzie, lost his job and the company almost lost its trading license.

Farmers and ranchers settled the area after the fur traders left. One of the more famous squatters was Theodore Roosevelt. Although he never held title to any land, Roosevelt operated about 5,000 head of cattle on two ranches along the Little Missouri River. After losing most of his cattle during the harsh winters of 1885-86, Roosevelt gave up frontier living and returned to New York.

"Empire Builder" James J. Hill was a leading homesteading promoter. Hill, who controlled three of the five railroad lines in the area, offered potential homesteaders space in railroad cars from St. Paul to eastern Montana for as little as $22.50. The space included enough room for the homesteader's family, all their belongings, seed, and livestock.

Most of the land in North Dakota is still productive farmland, while much of the land in Montana is used as range for livestock. However, the

area is now becoming known for its energy resources: oil, gas and coal.

The Bureau of Land Management organized Federal, State and local officials into the Fort Union Regional Coal Team in 1980. The team has several responsibilities: to seek public comment regarding coal development; to examine the impacts of development on the environment; and to offer for lease an economically and environmentally acceptable amount of Federal coal.

Based on public comments and interest from industry, the coal team has focused on 24 tracts in the Fort Union region. More than two billion tons of Federal coal are contained in the 11 tracts in Montana and 13 tracts in North Dakota. A leasing target of 800 million to 1.2 billion tons has been established for the region.

Energy development will cause some changes in the predominantly rural nature of the region. Agricultural impacts will vary from site to site. Small amounts of land will be necessary for road and facility construction. This will result in reduced crop production or grazing land. Energy development may also affect water quality and quantity.

The region is home to many species of wildlife, including antelope, mule deer, golden eagle, prarie falcon, migratory birds, and fish. Energy development may affect wildlife and wildlife habitat. BLM is firmly committed to minimizing the impact on wildlife.

Some deterioration of air quality is to be expected with energy development, but companies are required to meet Federal and State air quality regulations.

Reclamation of mined land is another area of concern that must be addressed. Experts agree that the technology exists to restore land to its original productivity, but some areas can be difficult to reclaim. Before any company gains permission to mine, it must post a bond to cover reclamation costs. The bond is not released until successful reclamation can be verified.

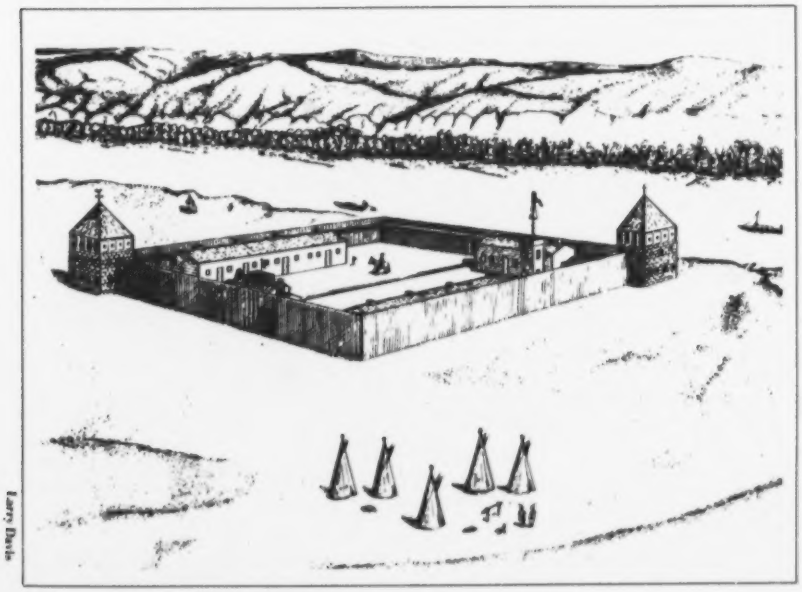
Economic changes and tradeoffs always accompany energy development. The job market expands, wages go up, and new businesses are created. But communities must also face and plan for changing housing needs, and new needs for service, including education and other changes inherent in a growing population.

BLM people will be meeting with the local residents this summer to discuss these potential problems and decide, together, what is needed. Their comments will be incorporated into the final environmental impact statement. The coal team will then make a recommendation for leasing, based on the final EIS, and submit its recommendations to Secretary of the Interior James Watt. After consultation with State governors, the Secretary will make a final selection of tracts to be offered and adopt a schedule for the competitive sale of leases. Leasing is scheduled to begin in June, 1983.

Secretary Watt has called the West an "energy basket" that may be vulnerable to a "crash program to develop coal and other resources." As a safeguard, Watt has called for "an orderly, systematic program of energy development that will protect the environment." Planning now for the development of Federal coal will ensure that the Nation's future energy needs will be met and, at the same time, protect the environment of the West.

Jackie Olson is a Public Affairs Specialist in BLM's Montana State Office.

Drawing of old Fort Union



Larry Davis

The Gates of Hell

By Barbara Gibbons

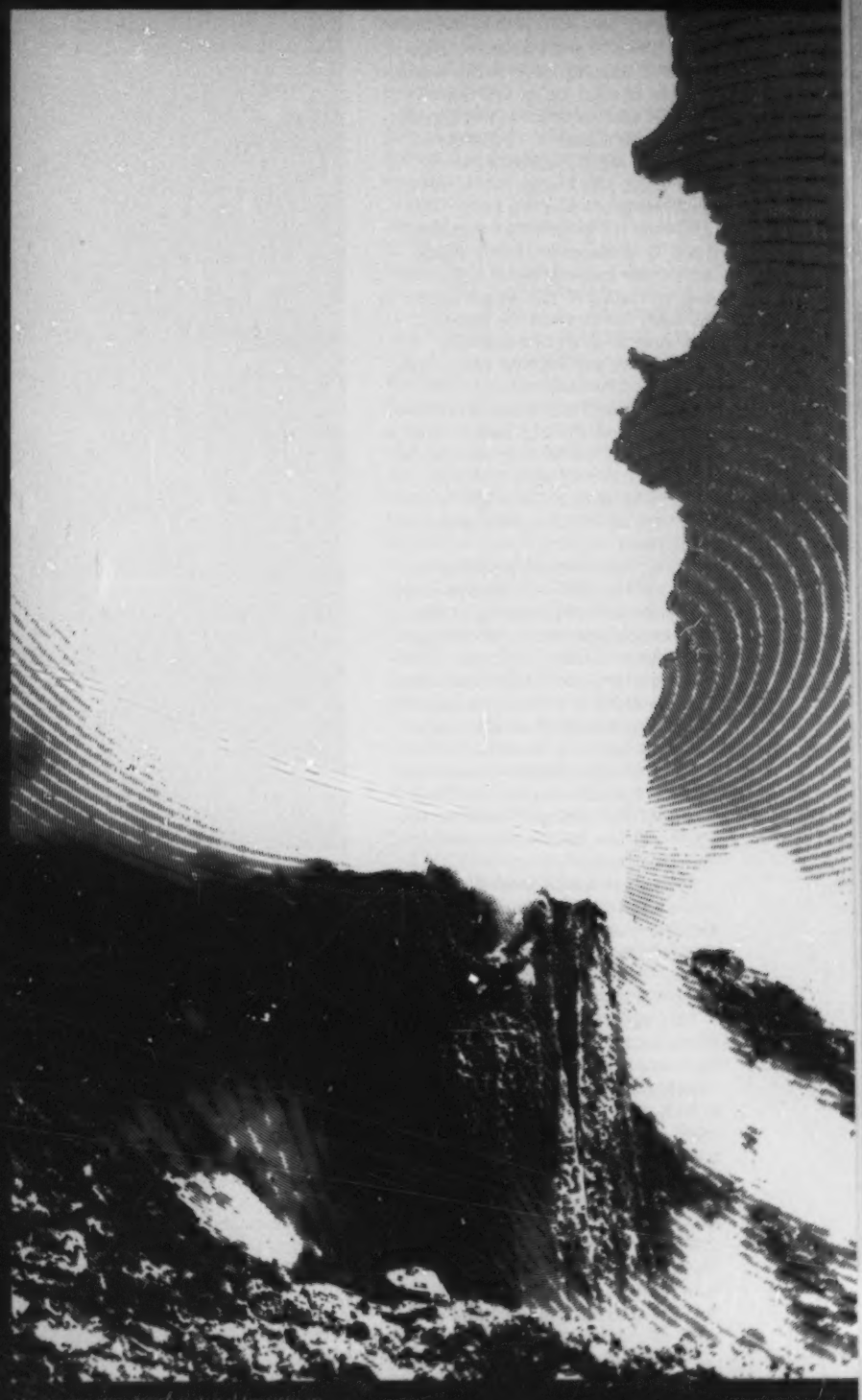
The Geysers Steam Field, described by its discoverer in 1847 as the Gates of Hell, is located 70 miles north of San Francisco and is the largest commercial geothermal development in the world.

Actually, the field is misnamed as it has no true geysers. Rather, steam escapes from natural fissures in the rock formation called fumaroles, at a regular rate. Geysers spurt water and steam for variable times, at intervals.

The Geysers Steam Field hosted popular health spas until the early 1920s, when the first attempt was made to harness the steam to generate electricity. Although tapping of the steam was successful, the turbines and pipes could not withstand the abrasion and corrosion caused by particles and impurities in the steam. Additionally, geothermal energy did not prove to be as economical as the hydroelectric plants in use at the time, and the project was abandoned.

The first successful well was drilled in 1955, and in 1960 Pacific Gas and Electric Company (PG&E) constructed the first geothermal power plant in the United States for the Magma and Thermal Power Companies.

Ten years and four PG&E power plants later, Congress passed the Geothermal Steam Act authorizing the Federal government to lease geothermal resources. In 1973, prior to the Bureau of Land Management's first lease sale, the Geysers development surpassed those in



Steam escapes from natural fissures in the rock formation called fumaroles.

Italy as the largest commercial geothermal development in the world.

BLM conducted its first lease sale on Federal lands at the Geysers in 1974. At the time, 12 leases totaling nearly 9,000 acres were granted at an average bid of over $600 per acre. Two leases in 1977 and nine leases in 1978 bring the total to 23 leases on nearly 16,000 acres. The average bid in the 1978 sale was just over $5,000 per acre. All told, the Geysers has brought bid receipts of better than $22 million into the Federal Treasury.

Of the 200 wells drilled at the Geysers since 1955, 55 are on Federal leases and 43 of them have proven commercial. PG&E estimates each well costs $1 million to drill and around 15 wells are needed to produce the steam for a 100 Mw generating plant.

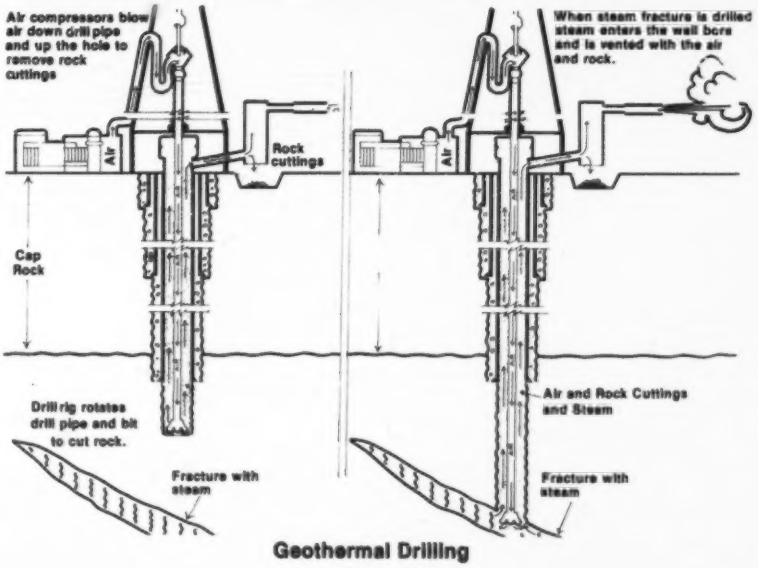
PG&E has 15 power generating units operating at the Geysers with a total generating capacity of 894 Mw, enough power to replace eight million barrels of oil per year. One PG&E unit in Lake County generates 135 Mw making it the largest geothermal power plant in the world. Stanford Research Institute predicts that the total generating capacity at the Geyers by the year 2000 will be 5600 Mw, enough power to service more than five million residential customers.

Power generated from the Geysers is channeled into an integrated electric system for northern and central California and provides about 4% of the system's total electrical requirements.

Two agencies in the Department of the Interior share responsibility for managing the geothermal development activities at the Geysers. BLM is responsible for pre-lease work. This includes identifying potential lease areas, preparing environmental assessments, and deciding on whether or not to lease. The Minerals Management Service (MMS) (formerly the Conservation Division on the U.S. Geological Survey) then divides the leasable lands into lease units and assesses their values. BLM, in consultation with MMS, has the option to reject bids based on these value assessments. Once lands are leased, MMS administers field development and exploration activities, monitoring

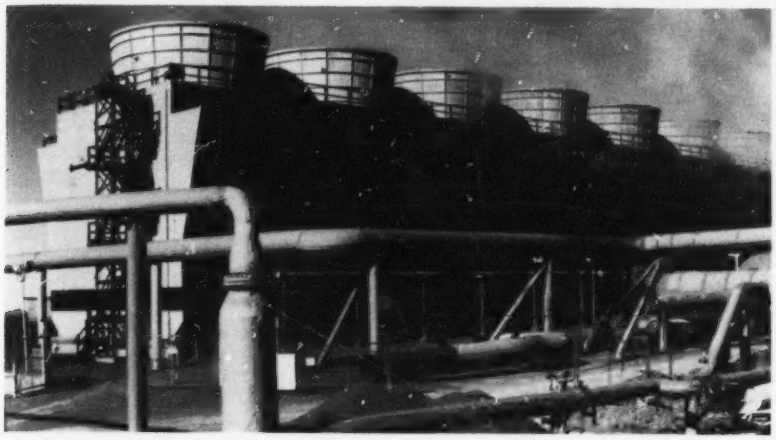
Eric Johnson

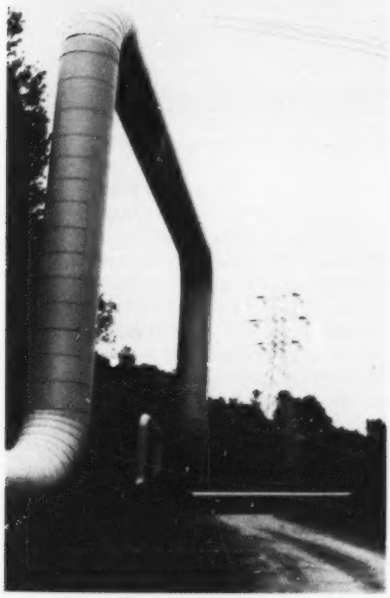
Drilling rig. It is estimated that each well costs $1 million to drill.


Air compressors blow air down drill pipe and up the hole to remove rock cuttings
When steam fracture is drilled steam enters the well bore and is vented with the air and rock.
Air
Rock cuttings
Air
Cap Rock
Drill rig rotates drill pipe and bit to cut rock.
Air and Rock Cuttings and Steam
Fracture with steam
Fracture with steam

Geothermal Drilling

By 1973, the Geysers development surpassed those in Italy as the largest commercial geothermal development in the world. (Top) The cooling towers and pipelines for the power plant. (Bottom) Loops in the pipelines allow for expansion and contraction of pipes carrying steam.





lease stipulations and environmental impacts.

Both Interior Department agencies work closely with the California Energy Commission to prepare joint environmental assessments for proposed power plant sitings on Federal land.

A major controversy concerning geothermal development at the Geysers deals with Federal mineral reserve lands. Much of the land surface was given over to private ownership under the Stock Raising Homestead Act of 1916. The mineral rights to these lands was retained by the Federal government. As nine of the 23 existing Federal leases in the Geysers are on mineral reserve lands the courts were called upon to decide ownership of the geothermal resource. In 1977, the Federal Court of Appeals ruled that mineral rights included geothermal resources.

Air pollution too has been a problem in that hydrogen sulfide (H_2S), a colorless gas with the odor of rotten eggs, is emitted into the atmosphere. New units using the "Stretford" process are being tested and are said to remove 95% of the hydrogen sulfide.

Endangered wildlife such as the peregrine falcon are considered, and their habitat is removed from leasing. Rare plants such as the Socartes Mine Jewelflower are also protected, often by fencing.

More than 700 prehistoric sites have been identified in the area, and no development is authorized until a developer can guarantee compliance with the National Historic Preservation Act of 1966, and Executive Orders covering protection of cultural resources.

Landslides from natural causes are common in the area. Careful selection of drill sites and routing of access roads help avoid acceleration of landslides from geothermal development.

In addition to the receipts from bids discussed earlier, the Federal government collects rental fees and royalties from geothermal development. Annual rentals are not less than $1 per acre and a royalty of 10 to 15 percent is paid from all producing leases to the Federal government. The Geothermal Steam Act of 1970 and the Federal Land Policy and Management Act of 1976 provide for the dispersement of 50% of the monies received from Federal leases to the State in which the leased lands are located. Additionally, California law disperses 40% of the State's receipts to the county of origin and 30% to local jurisdictions to be used to mitigate any adverse social, economic or environmental impacts associated with geothermal development on Federal land.

Consistent with the Nation's need for domestic energy sources, all of the remaining BLM public lands and mineral reserve lands in the Geysers vicinity that have been designated as suitable for geothermal development will be leased in 1982. Approximately 120,000 remain to be leased. Nearly 38,000 on public land and 38,000 of mineral reserve land.

Cooperation has been the key word at all levels in making a success story out of this abundant source of energy. Studies, financed primarily by the geothermal developers, are constantly conducted to improve technology, making development even more acceptable and economical.

Barbara Gibbons is a Public Information Officer in BLM's Ukia California District Office

Energy Boom Towns
It's Not All Bad!

Story and photos by
Evaline A. Olson

The casual observer of the landscape might find it easy to write off the sprawling high desert lands that sweep across northwestern Colorado into Utah and Wyoming. A word of advice—don't!

To the geologist, miner, and researcher, that land spells a bonanza of oil and gas, coal, oil shale and uranium. Some people talk in astronomical figures about the billions of barrels of oil that could be cooked out of the "rock that burns," shale. To towns that have tenaciously clung to life by the thread of agriculture, mining, and recreation, mineral resources promise a fulfillment of solid growth that has always seemed just beyond their grasp.

Sudden growth is no stranger to towns like Craig, Rangely, and Meeker. They were all founded in the early 1800's and now flourish at the points of northwestern Colorado's energy triangle. The region has a history of dramatic population surges and promised wealth. It all began in 1822 with the fur trade, then came mining, railroads, cattle, and sheep. Next there was oil, coal, and shale oil wagging the finger of temptation in the early 1900's and doing it again today.

The promise of growth and fortunes from shale oil has always been a gleam in the eye of northwestern Colorado. On the eve of the 21st century, there's a difference in that promise. Billions of Federal and corporate American dollars have been poured into developing the shale resources as a cushion against the Nation's foreign oil dependence.

Just like kids everywhere who explode out of last year's clothes, so too did cities and towns of the "energy triangle" literally burst at the seams with the arrival of researchers and roustabouts, draglines and drillers. They came to wrest solutions to the energy dilemma from the ancient cliffs of shale and to lay back the fleshy red earth to reach rich, black coal beneath the surface. Much of that activity occurs on public land managed by the Bureau of Land Management, or as a result of leases issued on the Federal mineral estate that underlies that land.

There's a great temptation among journalists, politicians and others to refer to the "boom towns," of Colorado. They could just as well be talking about the concrete shafts that pierce the Denver skyline while rotating cranes fill the air with steel and shimmering-skinned buiildings of glass. When that talk turns to the energy fields, too often there's the implication of tattered tool sheds grown to towering urbania and crumbling again to decadence. A "boom town" moniker just doesn't set well with the northwestern Colorado citizenry. The headlines scream crime, inadequate housing and population unrest. No one can deny those negatives exist. The good news, if it appears at all, lies buried somewhere between the last sport story and the first obituary. Good news there is. This positive side of Colorado's energy growth needs to be told.

Some negatives may be but distorted positives. When a new chain

store brings to town lower prices and product availability, the interruption of nostalgia may be perceived as negative. In truth it means more affordable merchandise has come to people. Long distance treks to cities like Grand Junction or Denver are less frequent, as better medical facilities come to communities once isolated from them. Then too, there are expanded community facilities, and new housing adds to the town's tax base.

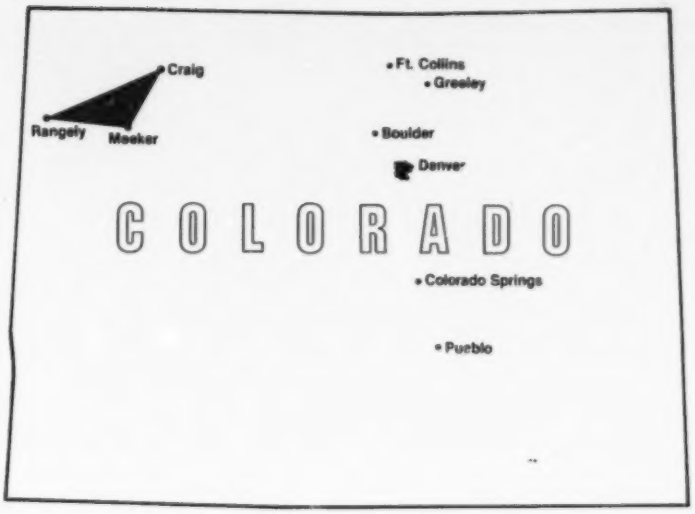
The upsurge of activity began with the energy crunch spurred by the Arab oil embargo of 1973-1974. Coal underlaid the high desert lands and was already being produced at about six million annual tons in 1972. By 1980, 18 million tons were being mined each year.

Early on, as the search for energy accelerated, so did the influx of service industries and people to staff them. Towns that before 1972 had known population changes of perhaps a dozen families a year now saw daily arrivals of scores of new families whose interests and philosophies were different from their own. Once adequate community facilites were stretched to the limits. Certainly there were negatives to population growth.

Let's not forget the positive side. The citizens are aware that growth is inevitable. The energy resources will be used. As individuals and as communities, they are tackling problems with innovation and resolve, capturing the strengths of new thinking and new money.

In Craig, voters passed bond issues that funded a variety of services including the $9 million school and community facility. Rangely looked at its needs and, among other actions, voted to form an Urban Renewal Authority to accommodate new housing. Meeker citizens voted approval of bond issues to fund sewer, water treatment and school facilites.

Part of a housing development, this house is a project of the students of Northwest Community College.



George C. Francis, Colorado State Director of the BLM, commends the Colorado State Government for having shared earmarked oil shale, oil and gas and coal royalties from Federal leases to form the Oil Shale Trust Fund and Energy Impact Fund. In addition to these funds, the Colorado severance tax becomes a part of the financial planning for energy impacted areas. Francis said, "All but State severance tax funds come to the State from royalties on its Federal minerals base and they are applied specifically to those areas that have been impacted by demographic change."

With patience, town officials have worked through a host of problems and from those trials emerged a professional approach to decision-making, better policing, higher levels of employment and improved water and sewage systems.

Marvin Pearson came to Craig in 1972 as District Manager for the BLM. He said, "I've seen Craig grow from a static little community of about 4,000 to an expansive one where hundreds of construction workers, miners and entrepreneurs and their families came into town. Sure, we saw a lot of problems in those early days of growth that started about 1974, but we've seen more good come of it than has ever appeared in print or on the television and radio."

Mary White, President of the Business and Professional Womens' (B&PW) club and owner of the LaPlaza restaurant, came to Craig in 1980 after spending most of her adult life in Denver. She wanted to flee the big city. She'd never been to Craig but frankly chose it as a growth area where she could make a living for herself and three sons.

Mary readily agrees that the good enjoyed by the community, which of course benefits from inflowing dollars, comes as a product of a creative spirit of Americans building a new life. She laughed, "After all, that's what I came here to do. I ended up learning the restaurant business, using recipes handed down in my family for years. Along the way to that end I found a realtor, remodeling contractor and business partner all in one. We married, we're excited about our business and the community and we couldn't be more pleased with what we see in Craig." "We" includes husband, Bob White, a native of Craig, who was born in the same adobe home-

stead house near Sunbeam, Colorado where his mother was born in the late 1880s. If he has reservations about the energy future of Craig, he remains optimistic that the town's boom won't bust. "We've had oil fields for a long time and there's a lot of heavy trucking going on through here. That isn't going to stop. Craig is a viable marketing center and it will continue with a more solid economic base as a result of the energy development and the Colorado-Ute Power Plant with the coal mines that provide fuel for it."

Craig has survived the trauma of rapid and sometimes undisciplined growth that occurred during the height of construction, energy exploration and production, generally centered around coal. Colorado's Ute power plant placed two units in operation in 1980, each producing 400 megawatts to oe transmitted across hundreds of western and southwestern miles. In 1983, the plant's third unit will be completed with capability of another 400 megawatts. Production of northwestern Colorado coal provides fuel for the plant, thanks to a long-term contract.

W.R. Grace's ColoWyo coal mine, between Craig and Meeker, had more than 400 employees in March of 1982 with no plans for lay-offs. A projected methanol plant with coal being the basic material, was deferred in 1981 because of the national economic situation. Should that plan be renewed, new growth could occur at both Craig and Meeker.

Lee Carie, District Manager of BLM's Craig office said, "Coal production in northwestern Colorado is down. There are several reasons, not the least of them the economy. Another reason is the high cost of removing extensive overburden before the coal can be mined, and of course, there's the historic transportation isolation of northwestern Colorado." Transportation costs are now said to equal the mined cost of a ton of coal.

There is a leveling off of growth at Craig, in fact, some say a slight decline because of reduced coal production. The citizens and their city government can take a deep breath, review past growth, and enjoy the stabilization of rent, more jobs, cultural opportunities, more complete medical care, community services, and shopping facilities, while they prepare for the next surge of development that is likely to come.

There's little doubt energy will continue to play a big part in Craig's future as new technologies enhance coal production profitability and open up other energy horizons, such as the ongoing negotiations for overseas sales of coal.

David H. Smith lives in Meeker and sits on the County Planning Commission. His family goes back to the days just after the famed Meeker Massacre and he manages the family cattle ranch on land homesteaded by his grandfather.

"Grasshoppers" pump oil from under the streets of Rangely.

Any competition between energy and agriculture he sees as the competition for labor, but that has its positive side. Given today's agricultural woes, many ranchers are working part time in the energy fields to support their ranches, and energy workers no longer needed in that field are coming to seek work on the ranches.

Duane Rehborg, County Development Planning Coordinator in Rio Blanco County, was involved with directing community participation by the companies. Both he and Smith are quick to point out that Northern Coal, for example, put a lot of money into the community in street construction and development of the Sage Hills residential area, one that is not a "company town" but is a part of the tax base of the community. Northern employees had a $5,000 advantage to purchase the homes, but they were available to anyone who wanted to buy them.

No matter where explosive growth occurs, major adjustments must take place. Complexities of change come quickly into focus in communites of the West where distances are great and populations are small. Certainly "big bucks" are needed to provide larger plants for physical services like water, utilities, housing, and the myriad of necessities that produce and maintain a pleasing quality of life.

According to Rehborg, the town of Meeker, among the more recent to show evidence of energy-related growth, may well have been misinterpreted as "anti-growth" by the media when in fact its citizens were only displaying solid conservatism. That philosophy has deep roots in a determination to maintain a strong community identity, and an identification with the history of the State. The community was saying "We accept growth, but it must be planned so that it will neither destroy our identity nor dilute the pride we have in our heritage as we pass it to future generations."

Sure, some oldtimers might rather not see development at all, but as Dave Smith said, "We know it's going to happen, in fact needs to happen. America needs the

energy resources and they happen to be here. Because we know it's inevitable, we want to plan and have it come about in the best possible way."

The measured steps to progress that Meeker residents chose is paying off. With coal production slowed to a trickle and oil shale development temporarily shut down, jobs have been lost. Northern Coal had a staff of 170 in June 1981 and that has dropped to fewer than 50. About 90 percent of those workers lived in Meeker and most of them owned homes there. The combined C_a and C_b oil shale tracts saw 700 people working in May 1981, but eight months later there were fewer than 100. Of the shale oil development employees, perhaps 25% lived in Meeker and a majority of them rented.

The slower pace of energy development in the Meeker area doesn't concern Smith. In fact, he thinks it's not all bad because, "here about a year ago," he said, "I wondered if we weren't going to get snowballed into allowing a lot of growth that wasn't very orderly, more of a reaction to the last thing that happened. That's not a very good way to organize the town."

Rehborg is eager to talk about the positive aspects of the "boom" his county is experiencing. He points to the historically agricultural nature of the county. Even in "good times" ranching in northwestern Colorado was difficult and dependent upon irrigation—not consistently available but always costly, and subject to the vicissitudes of Mother Nature. In today's less favorable economic climate, small ranchers are having a very rough time. Passing on the family ranch may not be in the game plan of the future.

The young people, nurtured to maturity where life on the ranch, for better or worse, was what they could expect, sought alternatives in the past. Most graduated from high school in towns with few jobs and certainly no career paths for long-term personal development, so they left the community and were gone for good. "We're seeing a turnaround of that trend," said Rehborg. "High school graduates in energy-rich Colorado are now surrounded by new types of work and higher technology that they knew little about in the past and certainly had no exposure." Some are motivated to pursue careers in energy-related fields rather than leave home for jobs in the city. Some are considering the option of attending a trade school or one of the junior colleges on the Western Slope to train for the burgeoning army of energy seekers and producers.

Mary and Bob White, "We see Craig as a good place to be in business and a nice place to live, and we want folks to know there are nice things to do here."

Northwestern Community College started in Rangely in 1962 as a branch of Mesa College. In 1970 the school won its own District in Rangely and now has extensions in Meeker and Craig. Mesa College is located in Grand Junction and Colorado Mountain at Glenwood Springs expanded its campus to Steamboat Springs. All are becoming involved in teaching petroleum technology. In addition, some of the companies working in the energy field are opening up trade-oriented types of jobs as trainee positions.

The slow-down in development at the C_a and C_b tracts and reductions in coal production, while having certain economic impacts on the growing communities, still has its bright side. It buys time for training local young people to become corporate employees who will contribute over the long haul to a town's economic mainstream.

Highway 64 slopes westward to Rangely. It follows along and above the verdant river bottom pastures where sheep and cattle graze until spring. The agricultural scene gives way to more desert-like lands of sagebrush and pinyon juniper. First one and then increasing numbers of oil well "grasshoppers" pump oil with a measured precision and you're at the Rangely oil fields.

Near the town of Rangely, oil springs were found in 1892 along what they named Oil Creek. In 1902 the Poole Well was brought in and an oil "boom" ensued. When producers discovered the reserves lay so deep it just wasn't worth the effort or cost to produce, that first boom paled. Until the 1940s Rangely's population hovered between 100 and 200. Other wells had been located and sustained modest production until World War II when the demand for oil skyrocketed.

That's when the Rangely oil field (the largest oil-producing area in the Rocky Mountain region) was discovered and it soon became clear the town was surrounded by oil and gas fields as well as coal and oil-bearing shale.

Arlene Sinclair, who came from Denver with husband Jim in 1948 because of work in the oil fields, said, "All you have to do is look at the working pumps in and around town to know that Rangely exists because of oil."

The realities of oil production are clearly visible. The skepticism of the future of oil shale is a fragile thread woven within the conversation, but the star of coal production burns brightly. Long-time

residents remember the coal production that used to come from the original Deserado mine, about eight miles out of town.

A relative newcomer, Ann McLachlan Jones' excitement punctuates her enthusiasm for the future of the new Deserado Mine being built by Western Fuels-Utah. Ann came to Rangely, a graduate from Michigan Central University and worked at Northwestern Community College for two years. Western Fuels then approached her to become their Community Development Director.

Western Fuels-Utah will provide coal from the Deserado Mine to fuel the Deseret Generation and Transmission Bonanza Plant Unit 1, near Bonanza, Utah. Western Fuels owns 40 surface acres at the mine site and has leases for the mine-waste disposal area which will cover 1,760 acres of BLM-managed land. Other BLM permits granted to the company total 1,148 acres for rights-of-way for roads, the conveyor system, railroad load-out facility, water wells, etc. Coal reserves under Federal leases, formerly held by Moon Lake Electric Association, were assigned to Western Fuels and total 3,070 acres. Lease rights for Federal prospecting permits will add another 3,371 acres of coal.

During the period of construction there will be an estimated 335 workers at the mine site, add to that a future influx of 500 construction workers who will build 38 miles of electric railroad to haul coal from the mine to the Utah-based Deseret plant.

The projected life of the mine is 40 years and will have a planned permanent work force of 373. The town of Rangely will bear the brunt of the immediate impacts of population growth, but the mine's tax base is in the county. The changing times have brought both sophistication and professionalism to town and county management throughout the region and Rio Blanco County provides a classic example. Together, county and town officials totaled up the cost of providing services and housing for a projected population of 2,100 (nearly double the town's present size), then together they negotiated for and won $17 million in up-front and projected "boom town" aid from Western Fuels.

Of the lengthy negotiations, Rangely's Mayor, Peggy Rector said, "It was a challenging and exciting experience. I'm sure that we as citizens and local government officials learned a great deal about the complexities of the business of massive energy development.

Rangely was faced with immediate financial needs to provide services, to be sure, but it also needed room to grow. The community is virtually landlocked since 44 percent of the land surrounding it is public land managed by BLM. BLM State Director Francis made a decision in August 1981 that will allow the town of Rangely to expand its boundaries by 106 acres. This is in keeping with BLM's desire to be a good neighbor and Secretary of Interior James Watt's policy of assisting local governments. In issuing the decision Francis said, "I have invited the Town of Rangely to submit a written order to purchase the land at the appraised fair market value of $4,500 per acre for 80 acres of residential property and $6,000 per acre for 26 acres of commercial property."

The offer to sell was quickly accepted by Rangely's City Council and the offer to purchase was made. Litigation by a group of Rangely property owners threatened to stall the purchase of land from BLM with plaintiffs arguing that there is adquate private land for expansion, even though at considerably higher prices.

On April 2, BLM issued to the town of Rangely a patent for 106.87 acres of public land which will allow for orderly expansion of the landlocked community. The transaction finalizes the 1981 BLM decision to sell the land. On accepting the patent, Mayor Rector said, "This positive step will assist the developers of the Deserado Mine to more suitably implement their impact mitigation agreement which provides for construction of housing at a mix of 60 percent single family dwellings, 20 percent multi-family dwellings and 15 percent mobile homes. Right now, we have a zero vacancy rate. A lot of people in the county are living in recreational vehicles because we do not have the housing."

Even the heavy brown clay that came with an early spring thaw couldn't mire down Mayor Rector's enthusiasm. She has a very positive view of Western Fuels' management and the agreement that was implemented within 30 days following the ground breaking at Deserado. She looks forward to the town's improvements of streets and drainage, expanded water system, revamping of existing utilities, a human services council, all occurring according to the blue print for progress outlined in the mitigation agreement and all carefully monitored.

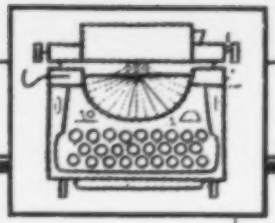
The future for Rangely does indeed look very positive.

Companies are keenly aware of the urgency to be a part of providing accepted lifestyles for the "imported" employees. Not only do they recognize the role it plays in attracting quality employees, but the longer term benefit in reducing occupational turnover.

The Colorado energy "boom" is on everyone's lips. Its euphoria and its frustrations ricochet among the skyscrapers of Denver where 82,000 out of 811,300 jobs (a healthy 10%) are related to energy. It whispers or wails with the winds of the sprawling high desert lands that sweep across northwestern Colorado and into Utah and Wyoming.

To quote from a timely BLM publication by Dr. Frederick J. Athearn, BLM Historian, *An Isolated Empire*—"The northwestern corner (of Colorado), today, is showing signs of fulfilling the dreams that it harbored for over a hundred years. All the things that were needed to foster growth and development are finally in place, and with energy a national priority, there is little reason to believe that this region will not grow and prosper for many years."

Evaline Olson is a Public Information Specialist in BLM's Colorado State Office



News Highlights

Rights-of-Way Regs Revised

Rights-of-way regulations have been revised by the Department of the Interior to make them easier to understand and to simplify some requirements.

Similar revisions for oil and gas rights-of-way and general rights-of-way have been adopted. The amendments reduce the amount of information an applicant has to provide and allow use of a standard Federal right-of-way application form.

The regulations eliminate the former requirement for advance agreements with the Department of Energy for the transmission of Federal power as a condition for issuance of rights-of-way grants.

New Recreation Trail

Secretary of the Interior James Watt has signed a certificate designating the Mineral Ridge Trail near Coeur d'Alene, Idaho as a National Recreation Trail. With this addition, BLM now has 12 such trails, covering 109 miles in six States as part of the National Trails System.

Geothermal Developments

A geothermal operated electrical generator went into production near Cedar City, Utah last winter making the Roosevelt Hot Springs one of only four producing geothermal fields in the U.S.

Several entities are involved in the Roosevelt Hot Springs project which uses geothermal energy from Federal leases. Utah Power and Light is constructing the generating facilities and will market the power that is produced. The steam is provided by Phillips Petroleum Company. The wellhead turbine generator was constructed by Biphase Energy Systems and Electric Power Research Institute is sponsoring the early testing of this special wellhead turbine concept.

Utah Power and Light is working on a 20,000 kilowatt generating plant at the site. It is scheduled to begin operation in the spring of 1984. As the resource is developed with more geothermal wells, Utah Power and Light plans to construct additional power plants.

Cultural Resources Protected

The Bureau of Land Management and the Minerals Management Service have set up cooperative procedures for the protection of cultural resources during mineral exploration and development on the Outer Continental Shelf (OCS). The agreement spells out responsibilities in all phases of the OCS program for identification and mitigation of effects on prehistoric sites and shipwrecks.

Alaskan Minerals Report

Three strategic minerals found in Alaska--cobalt, chromite, and the platinum-group metals--are the subject of a new report from the Interior Department's Bureau of Mines.

The report is the first in a series of annual assessments of the potential for strategic minerals in Alaska, where most of the areas considered promising for new discoveries remain unexplored.

Known deposits of the three metals are described, and reserves estimated. A map displays the locations of the deposits, and a table characterizes them geologically and lists sites recommended for further evaluation.

The Bureau of Mines Information Circular 8869, "Critical and Strategic Minerals in Alaska: Cobalt, the Platinum-Group Metals, and Chromite," may be purchased for $2.00 each from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Please specify title and Stock No. 024-004-02088-1.

OCS Leasing Program

Selection of a proposed final offshore five-year oil and gas leasing program designed to accelerate development of the Outer Continental Shelf under stringent environmental safeguards was announced in May by Interior Secretary James Watt.

In announcing the program Secretary Watt said, "The program will make more acreage available for leasing, will cut substantially the time now required to start leasing in promising frontier areas, especially off the coast of Alaska, and will use the market mechanism rather than government decisions to select areas for lease and exploration."

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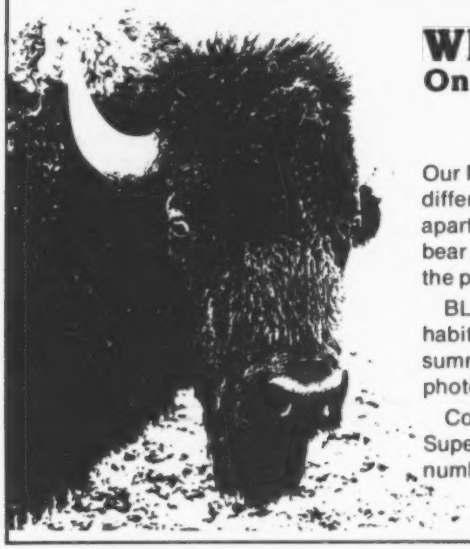

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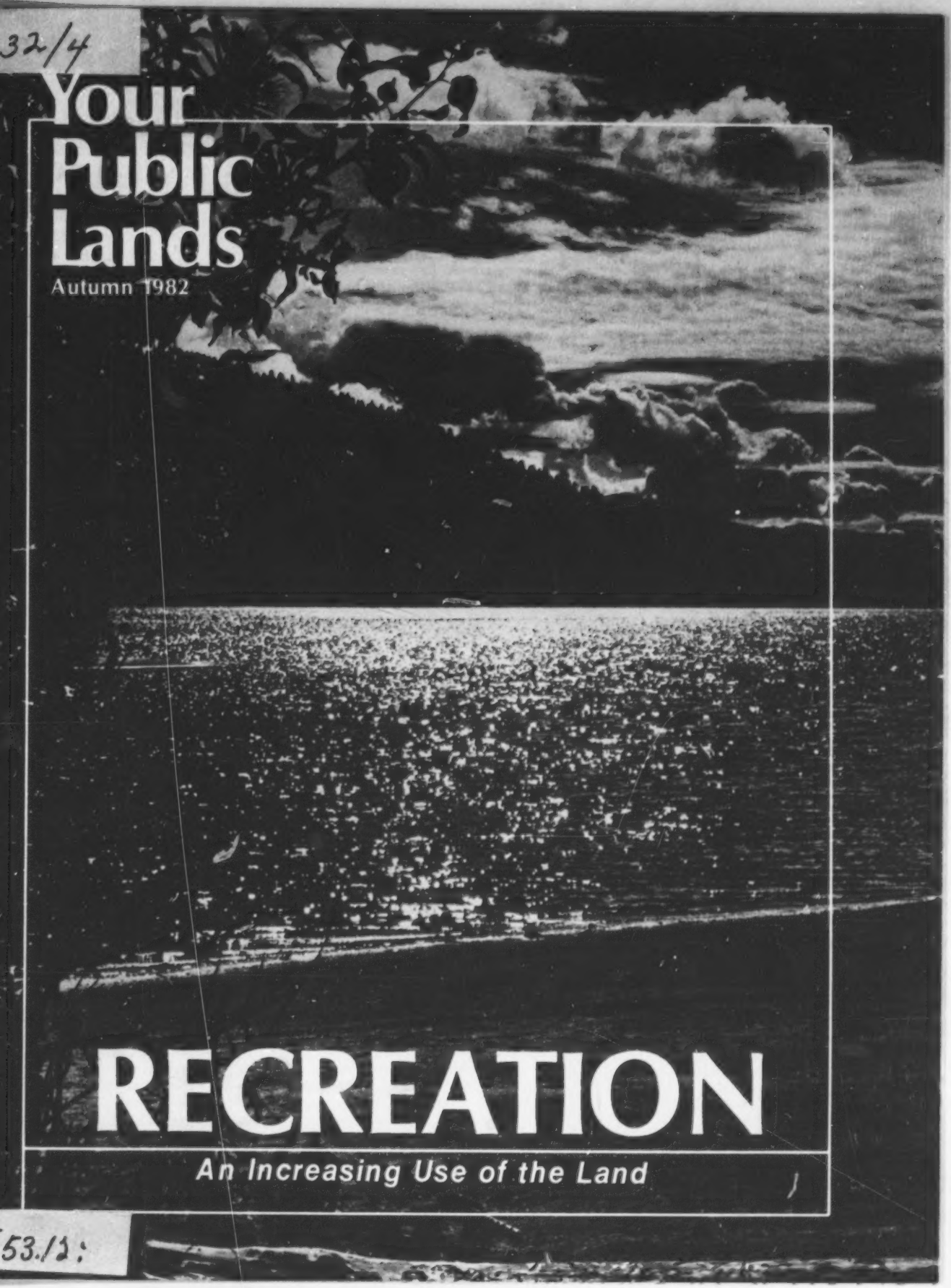
Autumn 1982



RECREATION

An Increasing Use of the Land

53.12:

Your Public Lands

Autumn 1982
Volume 32
Number 4

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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Cover: Payette Lake, McCall, Idaho. Photo by Trudie Olson, a winner BLM's 1982 employee photo contest.

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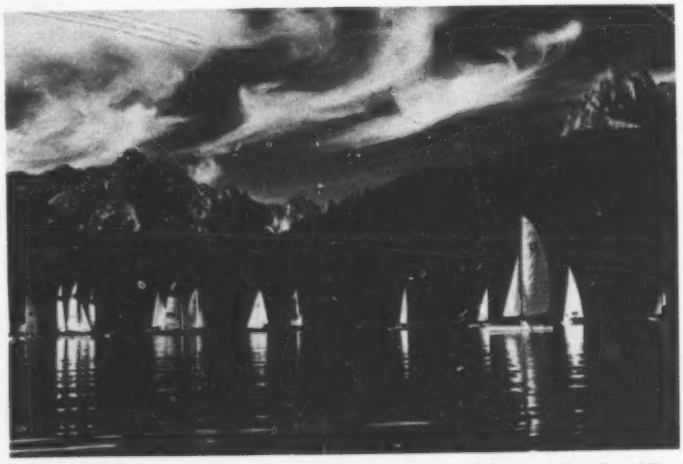
Policies, Goals and Directions

Public Lands for Recreation

Last year, the public lands played host to over 70 million visitors seeking rest and relaxation through recreation activities. That's an impressive number, and it has been increasing at a steady rate over the years.

As this demand has grown, the Bureau of Land Management (BLM) has tried to provide management and services necessary to make these visits safe and enjoyable while ensuring the resources affected by these activities were adequately protected and conflicts among competing users minimized.

But that job has not been easy nor inexpensive, and BLM is embarking upon a new effort to make the program more efficient, more cost-effective, and quite frankly, cheaper. By cheaper, I mean BLM will be handling this recreation impact with fewer dollars and fewer people, part of the overall emphasis to reduce government spending.



Sailboat Regatta

Photo by Trudie Olson, Idaho State Office

In many cases, achieving these objectives will mean some recreationists, such as those involved in commercial enterprises such as river running, or those benefitting from government investments such as campers at developed campgrounds, will be paying more of their share of program expenses. Recreationists will find the most intensive management efforts and controls at heavily used areas or areas where resource conflicts or damages are occurring, and will find increasingly less management, services, or facilities at less frequently used or lower priority areas.

To successfully make these changes, BLM needs the cooperation of those millions of recreationists who enjoy the wide array of benefits the public lands have to offer. We encourage recreationists to advise us on where and how BLM should focus its limited money and manpower so we can be as responsive as possible to their needs and wishes and for the resources they want to see and enjoy on the public lands.

As part of this program overhaul, BLM has developed a new recreation policy and initiated a new management direction. One key aspect of the new policy is to distinguish those public lands needing and deserving priority attention in terms of management investment and supervision. In other words, we will be focusing our limited manpower and money where it will do the most good for the public and the public land resources.

Accordingly, BLM local offices have already begun to identify *Intensive or Special Recreation Management Areas.* These are areas where recreation is recognized as the principle management objective. Within this category, higher priority is given to the following types of areas:

- Congressionally designated areas, such as national conservation areas, wild and scenic river segments, national recreation trails, etc.;
- major rivers and other water-based recreation areas where BLM has jurisdiction;
- areas with outstanding recreation values where existing demand cannot be satisfied by the private sector or another government entity; and
- areas where recreation capacity is exceeded regularly significant resource values are threatened.

The more of these descriptions applying to a specific area, the higher priority it receives. Other factors involved in determining priority include existing designations or special recognition, special management issues or concerns, the extent of BLM responsibility and commitment in the area, and the level of public controversy or interest. The goal is to promote better management in these areas, utilizing a larger percentage of available funds. Considering all these factors, we expect areas selected for intensive or special management will comprise a small percentage of the public lands.

On the remaining public lands, BLM will be involved in *Extensive Recreation Management.* Although recreation is not the primary management objective in these areas, that doesn't mean the public doesn't recreate on these lands or that recreation use is not part of BLM's multiple use plans. It

does mean that management emphasis in these areas will not be primarily on recreation but rather will focus on resolving only the most immediate recreation issues and concerns. Providing the public with information or addressing access issues are good examples. Minimal supervision, and, therefore, minimal manpower and funding, should be required in these areas.

In addition to this shift in management direction, BLM is also making other critical changes in our recreation management program to meet future challenges. As I stated earlier, fees paid by some recreationists will be increased. We expect these increases will be in effect by the end of 1982.

Part of the reason for these increases is a government-wide effort to increase fees in programs that are not cost-effective. In BLM's recreation programs, this inequity is evident when you consider we spent $8.7 million in taxpayer funds on management and maintenance last year and collected only $359,000 in user fees.

To correct this imbalance, fees will be increased for users in areas where a higher percentage of management costs are expended. Affected users include:

—those using campgrounds where developed facilities such as water, sanitary facilities, picnic tables, etc., are provided and require maintenance;

—those engaged in commercial activities, such as outfitters handling river trips who charge fees;

—those engaged in competitive events, such as off-road vehicle races;

—those engaged in large off-road vehicle events (more than 50 vehicles) even if the event is noncommercial and noncompetitive; and

—those wishing to use special areas where use must be limited and supervised because of resource considerations or management concerns, such as heavily used river segments.

We estimate these affected users constitute about 10 percent of all public land recreationists. The remaining 90 percent will continue to recreate free of charge because their uses are less concentrated and less demanding. For example, a family camping on public lands outside of developed areas will not be paying a fee because no services (water, restrooms, etc.) are provided, minor impact to the resources results, and little, if any, supervision is necessary.

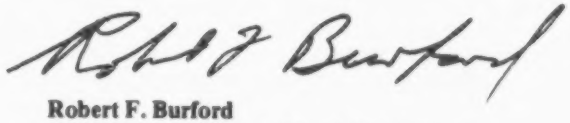
BLM is also doing its part to trim management costs, whenever possible, by streamlining internal procedures, reducing red-tape and unnecessary activities, and making our processes more cost-effective. In addition, we'll be looking for areas, facilities, or management activities that really don't belong under BLM responsibility, or where responsibility is shifting, or where we are duplicating the services of other government entities.

Once identified, we'll take action to resolve these situations, such as transferring a facility to another more appropriate agency, reducing the level of management, closing the facility, or entering into a cooperative effort with other agencies.

Finally, the last major component of this management effort rests on your shoulders—those who use or someday plan to use the public lands for recreation. We encourage you to:

- Take an active role in our planning efforts to change the direction of our management activities. To make this shift successful, we need to make sure we know the public's needs and desires in selecting areas for various levels of management, and where shifts in management responsibility should and can be made;
- Cooperate with BLM personnel in implementing these changes so everyone can be assured the necessary changes are made fairly and all those involved understand the rationale behind the decisions; and
- Where possible, volunteer your time and expertise in a variety of areas to better everyone's recreation experience. The President has made volunteerism a cornerstone of his public policy and BLM is finding many people willing and able to help. There are already an estimated 843 volunteers working on a variety of multiple use management projects such as marking trails, improving campgrounds, serving as campground hosts, staffing visitor centers, monitoring events, helping to develop and maintain exhibits, and performing many other needed services.

Granted, all these efforts and changes in the recreation program will take a great deal of effort from everyone involved. But with the public's help, we're confident we can achieve these cost savings and accomplish these changes while still making the public lands accessible and enjoyable to all recreationists. The following articles in this edition of *Your Public Lands* will give you tangible examples of many aspects of public land recreation management now being conducted in BLM offices throughout the West and Alaska.

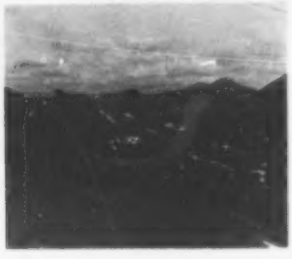


Robert F. Burford
Director of the Bureau of Land Management

Recreation and Mining

An Unlikely Marriage

By William J. Robertson



All marriages are not made in heaven. In fact, sometimes the partners in a marriage are complete opposites and are at constant odds with each other. But strangely, these marriages frequently are successful and are enhanced by the constant interplay of differing interests.

Such a relationship exists in two special land areas in Alaska created by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA)—commonly called the Alaska Lands Act. The marriage created by the law joined two very unlikely interests—recreation and mining. The Bureau of Land Management was appointed to assure that it remains a lasting union.

The Alaska Lands Act probably caused more debate, controversy and political maneuvering in the Congress of the United States than any other legislation in history. Beginning in 1971, a law which resolved the Native land claims in Alaska contained a small, obscure section which allowed Congress to designate millions of acres of public lands in Alaska as National Parks, Wildlife Refuges and National Forests. Because of the great mineral and energy resources in Alaska and because of the equally great interest of conservationists to pre-

serve large tracts of wilderness in the State, the debates in Congress were long, and arduous.

During these heavily lobbied Congressional battles, the negotiation focused for a time on a particularly unique area about 30 miles north of Fairbanks in Alaska's central region. The area was large—over two million acres—and very strongly supported by conservation groups for special designation as a National Park or Wildlife Refuge because of the area's scenic beauty, wild rivers and wildlife populations. An equally strong lobby, an effort by the mineral industry, sought to retain the area as open public lands allowing mineral development. Finally, a compromise was reached which allowed both interests to be served. BLM was designated to retain multiple-use management responsibility of two distinct, but contiguous areas. Each of the areas is larger than the State of Rhode Island which is relatively small by Alaskan standards, but constitute massive amounts of real estate to manage intensely for high public use.

The areas are distinct in that each has certain site specific requirements.

The White Mountain National Recreation Area

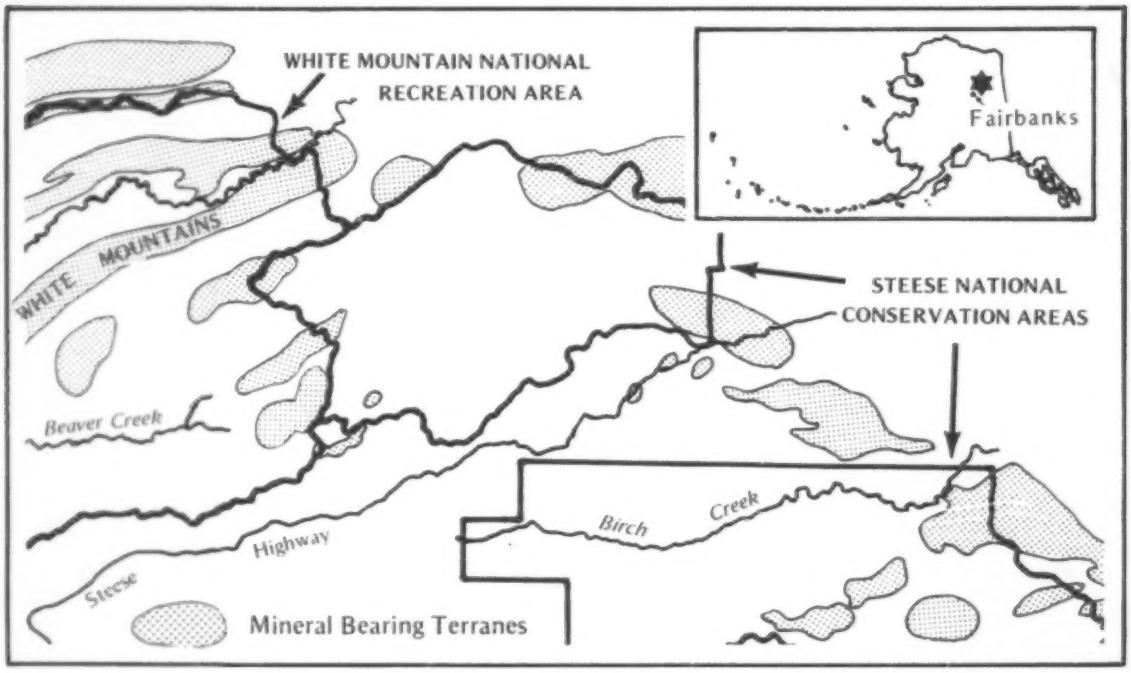
The Alaska National Interest Lands Conservation Act set aside one million acres for multiple use management with special emphasis on recreational use. Properly located, existing mining claims in the area were to be protected, including access to them, but any new claims would not be allowed. There are an estimated 2000 mining claims within the designated area. Leasing of minerals is permitted when such use will promote, or is compatible, or doesn't significantly impair recreation and conservation uses.

The White Mountain area is an indisputably beautiful site. It has long been recognized by BLM and by the public as a prime recreation and scenic area. The White Mountain Recreation Trail extends about 22 miles from a highway access point to a BLM shelter cabin on Beaver Creek Wild River.

Actually two trails exist, the summer trail, which provides hikers with an outstanding experience to penetrate Alaska's often difficult terrain, is the most heavily used. The trail traverses high hills, where possible. Boardwalks have been provided to permit travel across marshy areas. During the winter, a separate trail leads to the same designation but traverses essentially the low valleys; this route is popular for snowmobilers and cross-country skiers. The shelter cabin was provided by a local Kiwanis Club in 1966. It has been heavily used both summer and winter by recreationists. Use is controlled by a permit system at the Fairbanks BLM office.

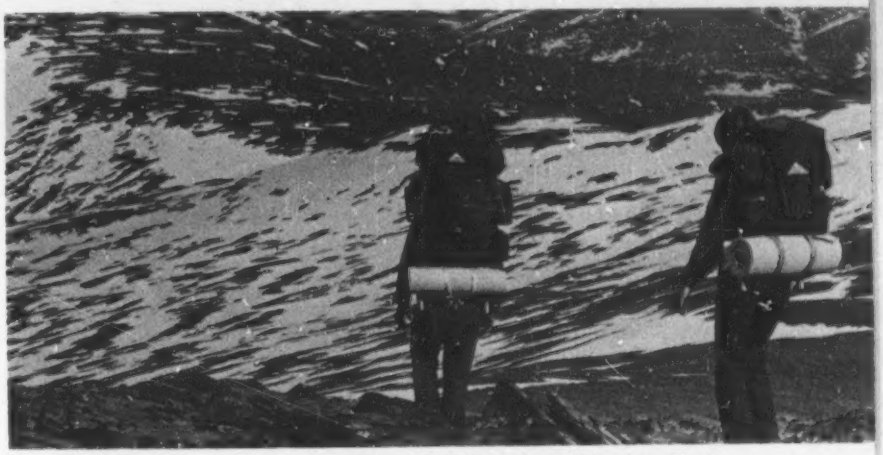
Beaver Creek Wild River courses 125 miles through the heart of the White Mountain area and is an essentially pristine clear-water river popular for recreationists. Surface access to the river is by a very primitive road constructed many years ago for access to gold mining claims. Aircraft must be used to remove boaters from the river with the alternative being a very long and slow journey down the lower Beaver Creek to the Yukon River and ultimately downstream to highway access. The river is also an outstanding stream for many of the Alaska fish species—especially the Arctic Grayling.

The White Mountain area is also highly mineralized and has the



potential for at least four world-class mining operations. Besides the ever-present lode and placer gold deposits, copper, lead, zinc, molybdenum, platinum, chromium, nickel, silver, and several of the rare earth metals are known to be abundant in the area. Some of these are considered to be strategic metals. Especially attractive to future development of any mineral deposits is the all-weather road system to the west and to the south of the White Mountains and the presence of a railroad system linking Fairbanks to tidewater. Also of major importance is Fairbanks, a community well situated to accommodate large scale development operations.

Animal species in the area include wolf, grizzly and black bear, moose and many smaller mammals. Birds of prey are also found with Bald and Golden Eagles and the endangered Peregrine Falcon occasionally seen.



The White Mountain area, an indisputably beautiful site, is also highly mineralized and has the potential for at least four world-class mining operations.

The Steese National Conservation Area

ANILCA set aside one million two hundred twenty thousand acres of public land as a National Conservation Area to be managed on a program of multiple use and sustained yield. Special values to be considered in planning and management of the area are caribou range and Birch Creek, a Wild River. Like the White Mountain National Recreation Area, valid existing mining claims would be protected and no new claims would be allowed after the passage of ANILCA. But unlike the White Mountain Area, the Steese National Conservation Area would allow for conventional mineral entry if provided for in the land use planning process. Approximately 5000 mining claims are presently filed in this area.

The Steese National Conservation Area is divided by the Steese Highway into roughly equal parts, lying to the north and to the south of the road. A strip of State owned and managed land is located between the two areas. Through the southern portion, Birch Creek, a designated Wild River, flows toward the Yukon River to the North. The "wild" designation applies to 125 miles of this river. Along the northern portion of the Conservation Area the Pinnell Mountain National Recreation Trail is located.

Historically, the Birch Creek and its tributaries have been heavily mined for gold since the late 1800's. Depending on the current market price for the precious metal, mining activity has fluctuated over the years. Many dormant operations have recently become active. In addition to the gold mining, a potential world class tungsten deposit lies in the southern area.

In contrast to Beaver Creek, in the White Mountain Area, Birch Creek is slower moving and its water clarity is not perfect. Typical of many of Alaska's streams that meander through muskeg and flat, swampy areas, the water of Birch Creek picks up the tea-colored stain from sphagnum moss peat bogs common in Alaska. Clay soils also add to water turbidity and occur naturally as well as being contributed to by mining activity. There is road access to both upper and lower Birch Creek to allow recreational fishing and boating. Lower Birch Creek is extremely sluggish and is rarely boated down to the Yukon except by powered riverboats.

Another attraction for the area is the Pinnell Mountain National Recreation Trail which winds 24 miles along the northern areas' southern border. Completely above tree-line, and accessible from two points along the Steese Highway, this trail is heavily traveled and popular for its abundance of wildflowers and a south-of-the-Arctic-Circle-view of the midnight sun. BLM also maintains two primitive shelter cabins along the trail to provide emergency protection during the occasional high winds and the cold of the high country. The trail is limited to summertime use because of heavy winter snow and hazardous, narrow, rocky trails.

Wildlife along the trail are typical of high altitude terrain in Alaska with grizzly bear and caribou the largest of the mammals common to the area. Many species of birds, including the ptarmigan, build their nests in rock crevices or on the ground.

One of the legislative mandates for the Conservation Area was the maintenance of caribou habitat. The caribou, which historically passed in large herds through the area and then declined in numbers, are now being seen in ever-increasing numbers. The reasons for the population decline are not clear and may have only been a cyclic phenomenon or perhaps a shifting of the migration route to other areas. Hunting pressure and other human activity could also have been a contributing factor.

Continued on page 8

Legislative Mandate to BLM for River and Land Use Plans

Congress, through ANILCA, directed the Bureau of Land Management to develop land use plans for both the Steese National Conservation Area and for the White Mountain National Recreation Area by December, 1985. In addition, BLM is to prepare management plans for Beaver Creek and Birch Creek Wild Rivers by December, 1982. The Fairbanks District of the BLM has initiated action on both of these mandates.

The planning process for land use is always a challenge for BLM. There is always controversy from various special interests with BLM acting as mediator to provide a plan that can serve a multiple use discipline. Whenever possible, uses are combined for a particular area and exclusive use is avoided.

Planning for the two special areas has given BLM a special challenge. Recreation and mining are traditionally thought of as mutually exclusive—where there is a mine, there is no recreation; where there is recreation use, no mining is allowed. Such is not the case in these special areas. Congress has mandated that they will be used for recreation. At the same time Congress also recognized the validity and continued existence of mining operations in the areas. It is BLM's task to provide a workable plan to allow both uses and satisfy all interests. Both recreation and mining interests have their particular points of view.

From the miners' point of view, neither area would be accessible had it not been for mining. Beginning in the late 1800's, gold rushes to the creeks surrounding Fairbanks created access trails to the streams, and mining camps developed into present day communities. Fairbanks, now a city of 60,000, began in 1902 as a cache and storage area for miners to resupply their needs. Modern day highways and secondary roads generally follow original mining trails. Mining also provided the first economic base for Alaska and in the view of many, will provide a major portion of Alaska's future income and employment through mining itself and its support services.

Miners are also quick to point out that old, abandoned mining camps and equipment are often preserved as a part of our historical heritage. In fact, several BLM recreational cabins used by hundreds of people each year are nothing more than old restored miners' cabins.

From some recreationists' point of view, Alaska in its most primitive state is desirable for persons seeking a wilderness type of experience. For others, access to areas of recreation is paramount, and a primitive condition is secondary. The vast majority of recreationists using the public lands in Alaska tend to take a moderate view. Most realize that without access to a recreational area, it can't be enjoyed. If access is limited to air transportation, then costs escalate rapidly. However, surface access is unlikely to be provided for recreations—the costs of construction are frequently too high to be justified for recreational use.

Thus, the dilemma that BLM faces in planning for public use of its two special areas is this : How can recreational needs as mandated by Congress be met while recognizing the valid existing rights of mining, also mandated by Congress? The solution will not be simple, nor will it be without controversy. The views of both the recreationists and miners are correct. Each group has the right to enjoy its own pursuits, however neither has the right to exclude the other. The answer to the dilemma will probably be the passage of time. It has taken nearly 100 years of activity in the area to reach the present situation. A law less than two years old will not make an instant change of course for these areas. There will have to be a good deal of compromise by both interests.

To gain more insight to the issues involved, BLM has launched an ambitious public involvement plan to gain citizen participation in the planning process. Meetings are being held with interest groups to receive this early response to BLM actions. Contacts have been made to all known miners and private land inholders in the area to fully involve and inform them of the law and of the intent of the BLM planning activity. Information, education and a willingness to listen are the keys to cooperation.

The final answer will probably lie in the fact that one interest is a renewable resource and the other is not. The mineral resource will someday be exhausted and the land will heal. Even in Alaska where the land is often referred to as extremely fragile, the land is, in fact, marvelously resilient. With careful planning, all sorts of activity can occur if one is willing to accept the fact that disturbance takes time to repair. Whatever is decided, will be through the land use planning process. Congress gave BLM considerable latitude in deciding how to manage these units. That is why land use plans are written. Plans for land use must be far sighted—especially in the planning for the White Mountains and the Steese Areas and incorporate all interests, and melding them into a harmonious whole.

Mining and recreation were married by law, in December, 1980 by ANILCA. And partners they will remain—for better or for worse. BLM's task will be to make the relationship a long and enduring one without discord and one from which all will benefit.

William Robertson is a Public Information Specialist in BLM's Fairbanks, Alaska Office.

Arizona's Desert Gem

By Jack Sept

When Interior Secretary James Watt recommended Aravaipa Canyon Primitive Area in Southeast Arizona to President Reagan for inclusion in the National Wilderness Preservation System, he described the area as "an outstanding natural area; a gem of the southwestern desert."

A "gem" is a very fitting description for this area of spectacular natural beauty 120 miles southeast of Phoenix. Aravaipa Creek, a unique perennial stream in the otherwise parched Sonoran Desert, is life blood to a narrow 12 mile-long patch of lush riparian habitat. Contrasting with the green colors of the canyon's floor and enhancing the area's scenery and interest are the desert plant communities growing on the 1,000 foot multi-colored walls, side canyons and the tablelands above. It is not unusual to look up through Arizona sycamore leaves and see prickly pear and saguaro cactus peering down into the cool canyon shadows.

The combination of riparian and desert communities in turn provides habitat for many forms of wildlife. Nine species of fish, six of amphibians, 35 of reptiles, 25 of mammals, and 202 species of birds are known to inhabit the area. Of particular interest to many visitors are the black hawks, zone-tailed hawks, prairie falcons and golden eagles that soar above the high rugged cliffs. Desert bighorn sheep, mule deer, white-tailed deer, coyote, fox, bobcats and mountain lions also use the area for water, forage and thermal cover. No other Arizona stream supports so large a number of native fish species, with longfin dace and speckled dace being dominant. Aravaipa Creek also supports the last reproducing population of loach minnow in southern Arizona.

Archaeological and historical data dating back 9,500 years indicates a long record of continuing human interest in and use of Aravaipa Canyon. Until the 1950's,

this interest and use was limited to local residents, ranchers, miners, and hunters. Occasionally hikers and horseback riders used the area.

During the 1950's, however, the popularity of the canyon soared as a result of publicity. Several articles in magazines brought attention to its significance as a place for various kinds of recreation. Visitor demands on the fragile ecology increased dramatically, leading to a growth of vandalism and litter, and the destruction of some of the attractiveness of the canyon.

To protect and maintain the natural beauty and primitive character of the area and still provide visitors with a meaningful and quality primitive experience, Aravaipa Canyon Primitive Area was established in 1969. The Safford District of BLM began a management plan in October 1969 and completed it one year later, after considerable public involvement and hearings. The public has widely accepted and approved the plan for the 4,044 acre area and it has been managed as a de facto wilderness for the past 10 years.

In implementing the management plan to provide more intensive care and protection to the area, the Safford District has stationed a permanent Park Technician at either end of the canyon to oversee the area. This staff provides for visitor safety and protection through regular patrols in the canyon. They are trained in first aid and rescue procedures and continually monitor visitor use and resource conditions.

As another means of protecting this rugged but fragile canyon and retaining the solitude that makes the area so pleasant to visit, a permit system now limits visitors to no more than 50 per day. Of those 50, up to 20 people may enter from the East end of the canyon and up to 30 may enter from the West. Length of stay is limited to a maximum of three days and two nights. Horses can be used only for day trips. Group size is limited to 10 hikers and five horseback riders.

Reservations to hike or ride Aravaipa Canyon can be made up to six months in advance. As could be expected, reservations for weekends and holidays fill up quickly and people wishing to use the primitive area at those times should make their plans and reservations well in advance. However, reservations for weekdays can often be obtained just a few days before visiting the area. Reservations made over one month in advance must be confirmed 15 to 30 days before the entrance date to cut down on the "no shows" and make those dates available to others wishing to enter the primitive area. All reservations are issued through the BLM District Office in Safford.

Starting in fiscal year 1983, BLM will initiate a fee of $2.00 per person per day to help offset administrative and maintenance costs. Nationwide, BLM collects only $1.00 in fees for every $24.00 spent on recreation programs. Local residents, user groups, and the public strongly support preserving Aravaipa Canyon's natural beauty and uniqueness from overuse and abuse and the fees collected will aid in that effort.

Each year about 4,000 visitors use Aravaipa Canyon Primitive Area. They come from all over the United States and many foreign countries to enjoy scientific study, wildlife observation, photography, and primitive recreation.

As more and more people enjoy this desert wonder, its reputation and demand grows. Because of its wilderness values and apparent lack of significant resource conflicts, legislation has been introduced to add the primitive area and 2,626 acres of adjoining public land to the National Wilderness Preservation System. If approved by Congress, Aravaipa Canyon would become the Nation's first Wilderness Area on lands administered by the Bureau of Land Management.

Aravaipa Creek offers contrast to the area with a rich, green riparian zone.

Jack Sept is a Public Affairs Specialist in BLM's Safford District Arizona Office.

ALASKA RIVERS

A Different Recreational Experience

By Joette Storm

The Delta, Gulkana and Unalakleet Rivers are three of the newest additions to the National Wild and Scenic Rivers System. Located in Alaska where wild and scenic are everyday words, these rivers offer a different recreational experience than most others in the system.

Flowing out of Northwest Alaska into the Bering Sea, the Unalakleet is a "truly wild river," says Dave Kelly, McGrath Resource Area natural resource specialist who is currently preparing a management plan for the river.

"When a person travels on the Unalakleet he or she knows that the area is remote and that the same type of open country exists for hundreds of miles in any direction," Kelly explains.

Although the Unalakleet may not offer the outstanding scenery of other rivers in the system, it affords views of mountains and an occasional historic structure such as a turn of the century mink farm. It is this remote quality that makes the river a special experience for a rafting party.

"At any bend there may be an unexpected encounter with wildlife," remarks the biologist, who savors the memory of an evening serenade by a pack of wolves during one recent river trip.

Fishing is also outstanding on the Unalakleet where grayling, arctic char, and salmon occur.

In the eastern portion of the district lie the Delta and Gulkana rivers, two popular canoeing and rafting streams with road access. The Delta offers both wild and scenic characteristics with its views of the Alaska Mountain Range and some exciting rapids and waterfalls.

Prospective river runners enter the Delta at Tangle Lake on the Denali Highway for a 35-mile trip that can be made in 2-3 days. Class III water, excellent grayling fishing and occasional sightings of eagles make this an attractive river experience.

On holiday weekends, the Delta and its companion river, the Gulkana, are floated by as many as 200 people because of the quality of experience and accessibility by road. Once on the rivers there is a

The Gulkana River, accessible by road, is a popular canoeing and rafting stream offering scenic views and exciting rapids.

sense of remoteness because even the Gulkana, which flows out of Paxson Lake along the Richardson Highway and parallel to the road, is far from any large population center. Glennallen is the closest community and its population of 600 is widely scattered across the foothills of the Gulkana Basin.

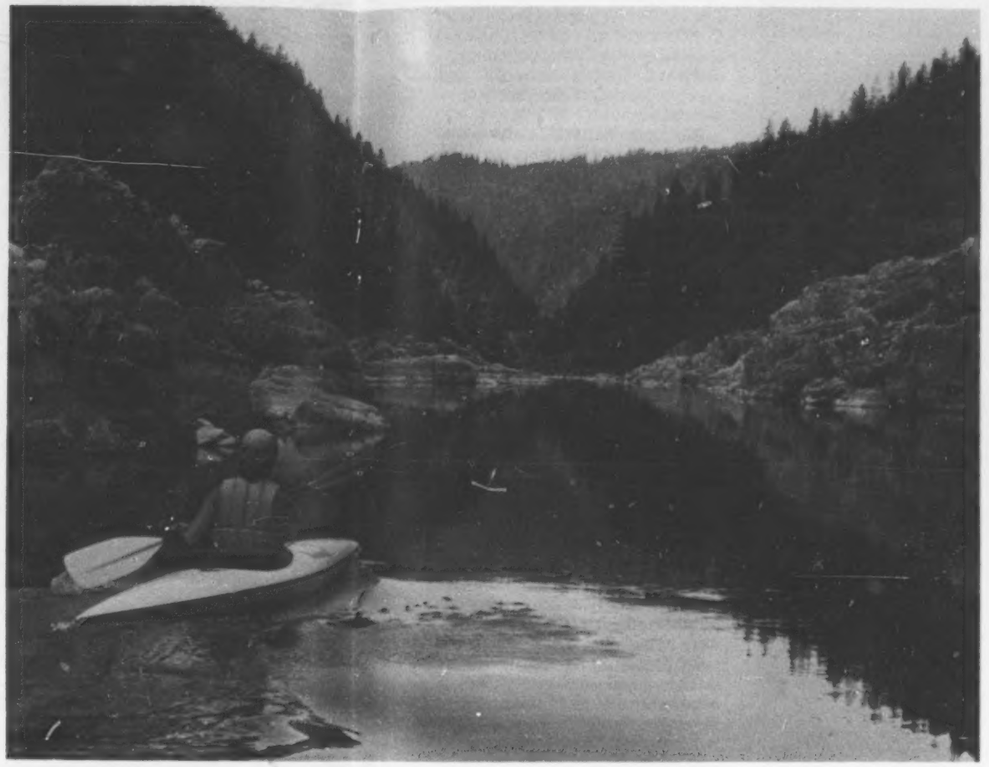
Buffered from civilization by a mile or more of dense vegetation, the Gulkana offers some tremendous eagle viewing and good fishing. All of the 45-mile trip from Paxson Lake to Sourdough has been classified as "wild." The lower reaches offer a view of the Wrangell Mountains including Mt. Wrangell, an active volcano.

Peak use occurs during the Fourth of July weekend, according to Larry Kajdan, Glennallen Area Recreation Planner. After then, use drops somewhat and a river party can expect to make the trip without encountering more than a dozen other recreationists.

"The management philosophy applied to the Delta River, Tangle Lake, and Gulkana River is to provide for recreational use of rivers and lakes at a level that will not impair their present natural settings, systems or resource values," says Kajdan.

Plans reflecting this philosophy are being formulated, with the help of people who use the rivers, for submission to Congress by the end of 1983.

Joette Storm is a Public Information Specialist in BLM's Anchorage, Alaska Office.



The Rogue River "Wild and Scenic"

By Carolyn Z. Roth

Through the years, the Rogue River in southwestern Oregon has offered both challenge and opportunity. It is nationally recognized as a river of outstanding beauty and recreational opportunity. Renowned for its runs of steelhead trout and salmon, the Rogue was favored by the notable author and outdoorsman, Zane Grey, who fished, boated, camped and wrote of its enchanting beauty and charm. Solitude Bar, Rocky Riffle and Skull Bar near Galice were favorite haunts frequented by this ardent fly fisherman.

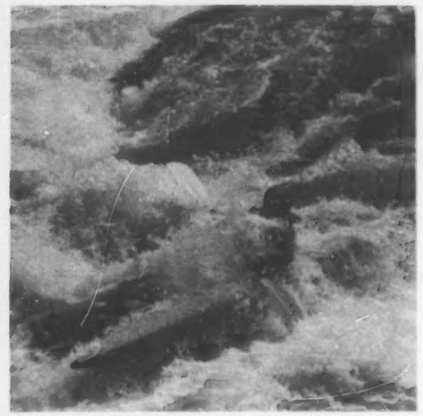
In October 1968, Congress passed the Wild and Scenic Rivers Act. An 84-mile segment of the Rogue, including a strip averaging one-fourth mile on either side, was designated as one of the first eight rivers in the Nation under this Act. The area designated extends from the mouth of the Applegate River near Grants Pass to the mouth of Lobster Creek near Gold Beach. The Act provided three river classifications—wild, scenic and recreational. In 1970, Oregon voters approved an initiative petition which created the Oregon State Scenic Waterways System. The same stretch of the Rogue was one of six rivers to be designated as a scenic waterway.

The character of the Rogue is varied. There is a rugged beauty in the steep-walled rock of Hellgate Canyon. The turbulent whitewater of Blossom Bar, Wildcat, and numerous other rapids in the Wild Section contrast with the pastoral charm of the rural countryside in the Recreation Section. The osprey and the stately great blue heron fish in the Rogue as they have for centuries. It's not at all uncommon to see black-tailed deer, river otter, black bear, and even Roosevelt elk.

To the best of our knowledge, the first human inhabitants of the Rogue River canyon were hunting and gathering people whose lives revolved around the seasons as they collected acorns during the early fall, and caught plentiful supplies of salmon in the spring. In the 1820's, fur brigades of the Hudson's Bay Company came into the area. Soon after, large emigrant parties arrived in Oregon. In 1853 the settlers began calling the U.S. Army for aid in defending themselves against the Indians. A series of skirmishes culminated in the Rogue River Indian War of 1855-56.

Gold was first discovered on the Rogue in 1859, and in the ensuing years prospectors investigated nearly every spot along the river. Today, evidence of mining includes abandoned equipment and old cabins, piles of stones moved from the streambed by Chinese laborers, and occasional mineshafts. Although artifacts may be found throughout the river corridor, it is important for visitors to know that the Archaeological Resources Protection Act of 1979 imposes stringent penalties for collecting archaeological materials from public lands.

Two sites along the Rogue are on the National Register of Historic Places: the Whisky Creek Cabin and the Rogue River Ranch. With much careful planning and labor, both structures have undergone extensive stabilization work. The Whisky Creek Cabin is an excellent example of a miner's cabin, and was inhabited into the early 1970's.



Summer brings whitewater enthusiasists.

The Rogue River was the home and business site of one of the first white settlers in the Rogue Canyon. Known as the Billings Trading Company and Boarding House until 1930, it was then sold and became a recreational homesite. This was the beginning of a new era...recreation as we know it now. Today, the buildings have been restored, and the main house is a small historical museum. Zane Grey's cabin, although on private property, is privately maintained and also available for recreationists to visit.

There are approximately 26 primitive camping sites in the Wild Section, and several more developed campgrounds in the recreation and scenic sections of the river. These facilities are maintained by the Bureau of Land Management, Forest Service, and Josephine County, depending upon land jurisdiction. Numerous fishing access sites are being developed for anglers to more easily reach the river. There are also several privately operated lodges along the river, in both Recreation and Wild Sections, offering boaters comfortable, rustic accommodations.

BLM operates a visitor center at Rand near the community of Galice with a staff to answer questions and check permits. Interpretive brochures and maps explaining the local natural and cultural history are available. Rand is also the base for the river rangers who talk with visitors along the river and help people understand how and why the river is managed as it is. They are also responsible for maintaining the river corridor and recreation sites.

Probably the most popular way to experience the Rogue River is by boat. Flat-bottomed, high-bowed Rogue-type drift boats and rubber rafts are the most common craft. Summer brings throngs of whitewater enthusiasts, primarily in rubber rafts and the smaller, more maneuverable kayaks. As the weather cools, the autumn run of steelhead lures fisherman in drift boats. Power boats operate in the recreation and scenic sections and upstream to Blossom Bar Rapids. The wild section is closed to powerboats between May 15 and November 15 (except below Blossom Bar). Commercially guided float trips are quite popular with visitors who lack the experience or don't wish to venture out on their own. Commercial jet boat excursions are available upstream from the mouth of the Rogue at Gold Rush.

Another interesting way to enjoy the Rogue River country is to hike the Rogue River Trail. This 40-mile stretch in the Wild Section has been designated a National Recreational Trail. It follows the north bank of the river, and affords spectacular views of the river and surrounding country. It is a "hiking only" trail, closed to motorized vehicles, horses and pack animals.

In the recreation and scenic sections, a paved road parallels the river. The road affords automobile visitors the chance for sightseeing along the river.

In June 1977 the Rogue Wild & Scenic River Managing Agencies Group was formed. Representatives from the Federal, State and county agencies develop, implement and evaluate overall policies and procedures for managing the river and adjacent lands. The Bureau of Land Management and Forest Service manage use of the Rogue River corridor in accordance with the National Wild and Scenic Rivers Act. BLM's Medford District manages the upper 47 miles, and the Galice Ranger District of the Forest Service administers the lower 37 miles within the national forest boundary. The State agency, with primary responsibility for administration of the scenic waterway, is the Department of Transportation, State Scenic Waterways System. The State Marine Board is involved in formulating regulations controlling boat use on the river. The management group also includes one person representing the counties that the river flows through.

The Scenic Easement Program

The National Wild & Scenic Rivers Act directs that "outstandingly remarkable" scenic, recreational, natural and cultural values be protected and preserved for present and future generations. Because of the locations of private land along the Rogue, Congress appropriated Land and Water Conservation Act funds for BLM to purchase land and scenic easements. This is to guide future development and maintain the scenic beauty and recreational enjoyment of the river area. When BLM buys a scenic easement from a landowner, it buys the right to protect the natural qualities of the area. The scenic easement contains restrictions on the future use and development of the land. For example, the easement may allow BLM to vegetatively screen an irrigation pump from the view of the river.

Impartial, experienced appraisers determine fair market values of the properties. Scenic easements have been acquired by BLM on nearly 2000 acres of private land at a cost of $2,000,000. Outright purchase was considered on any available land, if it was in the public interest to do so. Over $3,600,000 has been spent on this facet of the program.

A Permit System for the Rogue

Following designation of the Rogue as a National Wild & Scenic River in 1968, a coordinated BLM/FS management plan was sent to Congress in 1969 and again in 1972. In 1973, a moratorium on additional commercial outfitters operating in the Wild Section was implemented, leaving 41 qualified commercial outfitters.

During the mid-1970's a controversy developed involving non-commercial users, commercial outfitters and lodge owners. Oregon's governor told the State parks superintendent to start resolving differences. With the support of the managing agencies, the Rogue River Policy Review Group was formed to review regulations and boating use. They operated under several constraints. Under the National Wild & Scenic Rivers Act, the river had to be administered so as to protect and enhance its unique natural, cultural, and recreational values. The Policy Review Group agreed that users should have the opportunity in the Wild Section to camp out of sight and sound of other parties and to travel without undue delay.

Plans for managing a commercial and non-commercial permit system, and determining limits for the numbers allowed to float the river were based upon trying to maintain "a relatively natural, uncrowded river travel experience." These issues were discussed at length in public meetings and hearings in Portland, San Francisco, Eugene, and locally in Grants Pass and Gold Beach.

In December 1977, after extensive public participation, the Rogue River Management Group developed a consolidated commercial/non-commercial permit system. It was started in the 1978 season and extends from the Memorial Day weekend through Labor Day. Permit system management objectives were defined, and a "sociological" carrying capacity of about 120 persons per day (passengers) was established. The permits were evenly split between commercial and non-commercial passengers, based on 1976-77 use. The system also allows for unused permits to be given to standby boaters through a "common" and "open" pool, up to the 120 person limit.

Oregon Guide and Packers Association provides safe, quality experiences on the river, while

maintaining business stability, and providing a forum for discussion among outfitters. The managing agencies cooperate with the association in considering proposals for new procedures, such as the means to enforce the permit system and other river regulations. There are also questions about the transfer of commercial permits and the navigability of the Rogue River since it affects ownership of the riverbed and bank.

Programs today must pay their way...

BLM is trying alternative ways to manage programs so they can pay for themselves. In the past, a lot of work on the Rogue National Wild & Scenic River was accomplished by volunteers from the Youth Conservation Corps (YCC) and the Young Adult Conservation Corps (YACC). Since these programs have been done away with, the Medford District has enlisted the help of volunteers from the Student Conservation Association (SCA) and student interns from Oregon State University. These programs have been working out quite well.

Another facet of managing programs involves collecting fees to recover permit administration costs and the cost of providing recreation services. These costs include permit issuance, monitoring, and compliance activities. Presently, fees are collected only for commercial boating users. Non-commercial boaters and hikers are not required to obtain permits or pay a fee. If there are to be any changes in the fee system for commercial or non-commercial boaters, they will be determined prior to the summer use season (Memorial Day weekend of each year). Visitors planning a trip to the Rogue River should contact the appropriate BLM or Forest Service office as noted at the end of this article.

Although the decision has been made to charge fees, each BLM State Office in the West is developing plans on how to increase the revenues. They are dealing with affected groups and individuals in determining the fairest and most economical way to achieve that goal.

A commercial/non-commercial permit system splits boater usage and determines limits for an uncrowded river travel experience.

Several other rivers in Oregon are currently being managed by BLM in close coordination with the State Scenic Waterways program. They are the Klamath, Deschutes, John Day, Owyhee and Grand Ronde. Their natural characteristics and level of recreation use determine appropriate management.

Despite all of the management complexities, the Rogue continues to be a national symbol, a river preserved in its natural setting to provide experiences that are becoming rare in urbanized America.

Carolyn Roth is a Public Information Specialist in BLM's Lakeview, Oregon Office.

For general information on how to make reservations for commercial boating trips, contact Oregon Guide and Packers Association, P.O. Box 3797, Portland, OR 97208.

For boating permit information on public lands, contact the Bureau of Land Management, Medford District, 3040 Biddle Road, Medford, OR 97501, (503) 776-4174.

For boating permit information, within a National Forest, contact the Galice Ranger District of the Siskyou National Forest, P.O. Box 1131, Grants Pass, OR 97526 (503) 479-3735.

Permits are not required for hiking the Rogue River Trail.

The California Desert

PLAYGROUND IN PARADISE

By Gerald E. Hillier

Friday afternoon! A three day weekend ahead! What will it be? The mountains? The beach? The desert? Southern Californians have outdoor recreation variety at their doorstep like few people anywhere else in the United States. One of the biggest playgrounds is the 12.1 million acres of public land in the 25 million acre California Desert Conservation Area. But there is more to it than just a playground—much more! It's recreation in a paradise.

To many people, the vast arid region stretching east beyond the mountains behind the Los Angeles/San Diego megalopolis is simply a barren waste; something to be endured while traveling to Las Vegas or to return to roots in the midwest. But to millions of other people, the desert is an escape. Escape from congestion—from routine—from freeways. The desert not only offers alternative recreation, it offers an infinite variety of experiences.

Ironically, people pursuing the same ends—escape, fun, and adventure—seek it many different ways. What is your outdoor recreation pursuit? Hunting? Rockhounding? Sightseeing?—all rank high on the list of most Westerners. But the vast desert in Southern California, placed as it is next to one of the most populated areas in the world, is also placed next to a technologically innovative society. The desert provides opportunities for unique expression. Motorcycling, dune buggies, and all manner of vehicle activity abounds. Some are used for play, most for simply gaining access—getting off the highways and exploring. The California Desert, though, is more than vehicles. It is also wilderness and solitude. Artists, photographers, and nature lovers, from all over come to see and enjoy such things as the native palm oasis, wildflowers, rock art of bygone cultures, and scenic views.

In total, the California Desert offers an infinite variety of outdoor recreation experience. And it is a year-round experience. It is a combination of geography, geology, climate and access that makes it truly the people's playground in paradise.

THE PUBLIC LANDS

The desert region of Southern California covers an area about the size of Ohio. Inhabited by nomadic Indians when first seen by Spanish explorers, oppressively hot in summer, and with little water, it was a barrier to European settlement in the Southwest. The Missions on the coast did not link with those in New Mexico. Settlement of northern California and linkage by railroad to the East would happen first. But Southern California had a manifest destiny to grow. The desert was conquered by the transportation net and by miners and farmers who found that the land yielded products of great value if one met the desert on its terms and brought water into it.

During World War II, a new settler discovered the desert. The military found the broad expanse and clean air valuable for training troops and pilots. Today its military uses include space shuttle landings.

After the war, thousands of people returned to Southern California to work and play. During the 1950s and 1960s, while the urban population was expanding, many people were taking unauthorized "jack rabbit homesteads" in places like Apple Valley, Yucca Valley, Twentynine Palms, Sun Valley, and Joshua Tree. The land was being settled by people escaping the city and used as a base for rockhounding, exploring, or just having a spot to relax.

Today, the 12.1 million acres of public land, administered by the Bureau of Land Management, is still open to a variety of uses. The balance of the 25 million acre California Desert Conservation Area is private, part of military reservations such as Edwards Air Force Base, or is part of two national monuments. This 12.1 million acres provides the base for Southern California's desert playground.

PROBLEMS IN PARADISE

Deserts, by their very nature, are considered tough and hard. Some believe they are worthless, unless irrigated. The arid expanse is often viewed, even by residents, as merely a place to dump bed springs and old car bodies.

As the population of Southern California grew, became more

affluent and more venturesome, something happened. Even before the environmental movement gained momentum in the 1970s, many of the long time users and residents began to see changes. Great crowds gathered for weekends, motorcycle races drew several hundred entries, and sometimes well over a thousand. Remote oases suddenly had competition for use. People began to compete with the desert bighorn sheep.

As the use increased, so did the incidents of vandalism. Signs were removed or destroyed. Mining equipment, ranch houses, wells, corrals—were all vandalized. Indian artifacts were taken and rock art was defaced.

But something else happened too. Scientists began to discover that the desert wasn't tough; rather it was a very fragile place. Tracks left by tanks in 1941 are still there. Sand dunes are not lifeless; just a foot under the intensely hot surface, whole communities of animals live and thrive and may be destroyed by vehicles. Vegetation also thrives in the dunes. It was soon realized that people were literally using and loving their desert to death.

By some estimates, visitors use of the California Desert exceeds 15,000,000 visitor days per year. And that doesn't include people driving the Interstates headed somewhere else. Even those "visitors" may marvel at desert scenery or wildflowers in bloom. Some areas in the desert, such as the Imperial Sand Dunes, near El Centro may be visited by 50,000 people on a three day weekend.

MANAGEMENT

The decade of the 1970s began to show what people working together can do. What evolved was a pattern of use planned to protect resources, while still providing escape, adventure, and diversity.

In 1973, BLM developed a plan for recreation vehicle access, called the Interim Critical Management Plan. The first of its kind anywhere, it provided specific places for people to race motorcycles, ride dune buggies, or just escape from the freeways. It dealt with only one phase of recreation, but it focused on the problem of protecting resources and still providing outlets for use. It also dealt with only the most visible and most potentially damaging uses. Its preparation was guided by the Off Road Vehicle Advisory Committee, a committee of citizens who volunteered to bring about direction and protection.

Established by Congress as part of the Federal Land Policy and Management Act (FLPMA) in 1976, the California Desert Conservation Area was recognized as a unique land area requiring special management attention. In 1980 the California Desert Plan was adopted responding to the directive in FLPMA to prepare a comprehensive long range plan for the California Desert Conservation Area. The plan reflects the principles of multiple use and sustained yield and provides for management, use, development, and protection.

Management of the desert is complex. A motorcycle race cannot be permitted in an area being managed for either solitude or geothermal steam production. Likewise, other kinds of resource use must be considered—livestock grazing may not mix well with campgrounds. The desert, however, is a big place. There are few major developments on the public lands and most people like it that way. Rockhounds will usually accept a herd of sheep nearby

A "small" gathering near the Salton Sea. From hundreds of miles away, recreationists come to share the desert. Many of these outings are managed under BLM's recreation use permit system which assures that cruises by large groups avoid sensitive resources.

while other users view grazing as part of the West and the last vestige of a vanishing way of life. Ranching and mining, in fact, can become part of a recreational experience for city people who have forgotten what rural life is like. A once-a-year motorcycle race or four-wheel drive trek need not confiict with other uses or other kinds of recreation, if well timed and managed.

Recognizing this need for management,the Secretary of the Interior adopted the California Desert Plan in December, 1980. This plan responded to the directive in the Federal Land Policy and Management Act of 1976 to prepare a comprehensive long range plan for the California Desert Conservation Area. Key provisions of the plan relating specifically to recreation uses include:

- Designation of specific areas for ORV play covering a variety of terrain, sand dunes, and dry lake beds covering 500,00 acres.
- Designation for play of seven other dry beds, four other dune systems.
- Preliminary recommendations on 42 areas covering two million acres as suitable for inclusion in the National Wilderness System.
- Development of processes for the public to use and to designate routes of travel through-

(Left) A land of vast contrasts, public lands range in elevations from 235 feet below sea level to well over 11,000 feet. The Trona Pinnacles, formed of the minerals from springs offer a site of rugged beauty. (Right) Like a ski run, if placed in a cold climate, Competition Hill in the Imperial Sand Dunes attracts thousands each weekend.

out the Desert (Estimated by some to include 45,000 miles of roads and trails).
- — Provision for camping along routes of travel outside of developed sites or open areas.
- — Provision for competitive events on certain lands and designation of three point-to-point race courses.
- — Maintenance of the existing eight campgrounds.
- — Designation of the Eastern Mojave National Scenic Area.
- — Development of a Visitor Services/Resource Protection group to provide for visitor assistance, patrol, and enforcement.

Public land management by BLM in the California Desert is low key and designed to help, rather than hinder or direct. BLM's first obligation is to keep incompatible uses separated and provide for protection of truly unique resources. The California Desert plan does that. BLM protects resources. But the basic thrust of resource management is conservation and wise use. BLM is obligated to assure that a variety of uses take place on the public lands. This multiple use includes recreation, wildlife, livestock, and mining. Many important archaeological and historic sites, trails, and wildlife areas are fenced, protected, developed and interpreted. People can use these areas, but access may be restricted and the areas may be patrolled. Many areas are fenced and protected by volunteers who give both time and materials to help preserve them. Finally, BLM has an obligation to users—to aid and assist, to advise and to help them enjoy and use the public lands responsibily and safely.

DESERT RANGER

Recognizing the need for protection of these vast resources, Congress authorized a Desert Ranger force for the CDCA.

A corps of 17 specially trained resource managers patrol the 12 million acres of public lands. They do a variety of tasks including:
- — Visitor contact and information.
- — Search and rescue.

- — Resource inventory.
- — Conservation education.
- — Patrol of sensitive resource sites and areas of critical environmental concern.
- — User contacts—ranchers, miners, and others.
- — Law enforcement related to protection of Federal lands and resources.

In its early stages, the ranger program emphasized user awareness that desert lands have values other than recreation. Not all desert lands are held by the government and private property rights must be respected. Law enforcement delegation came in 1978, and since that time, rangers have been involved in many tasks involving protecting resources including desert plants, archaeological sites, wildlife areas, and livestock use allotments. Rangers perform duties in the remote reaches of the desert. They emphasize visitor service and resource information. They exist to help people. But they also assure compliance with land use plans and protection of valuable resources.

THE SPECTRUM

The desert is truly an escape. An escape from our regimented lives in a dense urban region. It is no longer a dumping ground. It is no longer vacant, open land. Some rebel at rules and guidelines for use, while others feel there are not enough. BLM feels that rules will not work if the public isn't included as part of the management equation. The California Desert Plan is based on a general tenet: People will use the lands wisely if they understand the consequences of not doing so.

Recreation use of public land is different from most other land uses. The users don't always form a homogeneous group. They can't even be called a special interest group because their interests vary so widely. All these uses abound year round in the California Desert Conservation Area. And the public is involved. They help manage by peer pressure, by setting examples of proper outdoor behavior and by helping BLM with developments, planning, and solving problems. And, it's not hundreds of people, it's thousands. Good people. People who want to help. People who want to be sure that the recreation they enjoy today is still available tomorrow and in the decades to come.

PLAYGROUND IN PARADISE

It's Friday afternoon of a three-day weekend. And in southern California you have a choice. The mountains? The beach? Or the desert? If it's the desert, then it can truly be an adventure. It's a place for everyone to enjoy, to explore, to use, and to protect, no matter what their interest.

Gerald Hillier is District Manager for BLM's California Desert District.

The Big Sky Country's Big Outdoors

By Charlie Most

Anticipation was running high as I walked away from the four-wheel-drive vehicle into the pre-dawn chill. Ahead stretched some of the most rugged and yet uniquely beautiful landscape imaginable. This was Montana's Missouri Breaks region, a land of strangely eroded formations, tortuous coulees, scattered brush and timber, and big mule deer bucks.

Although I would enjoy the rough scenery as daylight chased away the darkness, my principle reason for being that morning was to find one of those big bucks.

It was easy to understand why deer liked this country. There were abundant, brushy vantage points for daytime bedding grounds, plenty of good escape routes, should an intruder get too close to the bedding area, scattered pines and juniper for cover, and dense patches of mountain mahogany as a convenient supply of nutritious browse.

A steep trail led toward the distant Missouri River and I followed it downhill a short distance before turning off to hunt along the side of a big ridge. Numerous smaller ridges branched off the big one and I eased out along each of these to the end and then back toward the main ridge. There were plenty of fresh deer tracks and droppings, and my approach was to maintain the same elevation while hunting out all the brushy pockets and points.

And the tactic worked!

I had knelt behind a juniper bush to move my extra jacket into the little hunting pack when I heard the characteristic "snort" of a deer. Looking carefully through the brush, I saw a big doe moving in that spring-legged, mule deer way up the adjacent little ridge. She stopped to look back, another frequently displayed idiosyncrasy of mule deer, and then I caught a flicker of movement to my left. Three more does were standing there and behind one of them was the big, harem master buck I was hunting. As the doe stepped away from in front of him, I placed the cross-hairs just behind the buck's shoulder and squeezed the trigger.

It was an instantaneous, one shot kill—the kind every hunter should strive for—and I was in possession of one of the West's most familiar, yet prized big game trophies.

The public lands of the West provide some of the finest hunting and fishing in the world, and during the eight years I lived in Montana, I had ample opportunity to enjoy the Big Sky State's outdoor bounties. There are some 54,000 mule deer roaming public lands managed by the Interior Department's Bureau of Land Management in Montana. These lands also support an additional 20,000 whitetailed deer which seem to do as well in a prairie habitat as they do in the deer woods of Pennsylvania, almost 25,000 pronghorn antelope, plus elk, bighorn sheep, moose and black bear.

Mule deer are undoubtedly Montana's most popular big game species, and sport hunters there have developed some interesting ways to hunt these big-eared western deer. One delightful method is to float the wild and scenic portion of the Missouri River, hunting the little valleys and breaks leading back from the river, and the infrequent islands. There are more than 160 miles of river in the designated Wild and Scenic section and, except for three ferry boat crossings, the riverway is little changed from when Lewis and Clark journeyed upstream in 1805. With formal designation under BLM administration, it's expected to stay that way.

Floaters do most of their deer hunting during the early morning hours by walking out from overnight campsites.

Deer aren't the only game that can be hunted on a Missouri River

float. During the fall of the year, myriads of ducks and geese follow this great waterway during migration.

Contributing to this abundance of ducks and geese is a unique habitat improvement project by BLM biologists and engineers on Montana's northeastern prairies. Farther east and north extends the prairie pothole region, a land of numerous ponds and lakes gouged out by continental glaciers during the last ice age. This prairie region normally attracts millions of ducks looking for ancestral nesting grounds in the pothole country. The biologists took advantage of a reservoir building program, aimed primarily at providing water for livestock, to make certain modifications that would attract nesting waterfowl.

It's an axiom of waterfowl biology that the numbers of nesting birds increase as available shoreline increases. Also, nesting waterfowl seem particularly attracted to islands since they offer more protection from those animals that might eat the eggs or young.

In planning a reservoir, engineers use a plane table to determine where the shoreline will actually be on the ground. Once this shoreline is staked, any fingers of land or peninsulas projecting into what will be the pond become evident. Then, when the dragline operator begins construction, it's an easy matter to scoop part of such peninsulas away to create islands. And the scooped out earth can be deposited in the shallow areas, also evident, to create still more islands. The result has been a significant increase in nesting ducks and geese in the area where these many stockponds are located.

There's another unique benefit to this stockpond construction program. Some ponds tap springs or other cold water sources, while others depend on warmer surface runoff for their water supply. Because of this, the man-made "potholes" show individual variations in water temperature. Working with fisheries experts from Montana's Fish, Game and Parks Department, BLM had these reservoirs stocked with varieties of game fish compatible with the water temperature range in the different ponds. Now, a fisherman can stand on a prairie rise with three ponds in sight and choose among trout, bass or walleye fishing.

Montana is famous for its trout streams, many of which drain in part from the public lands. What angler hasn't heard of such "blue ribbon" trout waters as the Big Hole, the Beaverhead, Madison, Galletin, Jefferson, and Yellowstone? Add to these the numerous smaller streams that also have excellent fishing and Montana literally becomes an angler's mecca.

Although spring runoff often has many of the State's fine streams in a high, murky condition until mid-July, there is good fishing in May and June when the big stoneflies emerge. These giants among aquatic insects, usually two inches or more in length, crawl as nymphs up onto shoreline rocks or mid-stream boulders where their skins split to let the adult insects take wing. These adults fly back over the water to mate and deposit eggs, thus starting the next generation of stoneflies. It's when the adults return to the river that the big trout go on a feeding binge, often slashing wildly at the clumsy insects floundering in the current's grip. Big trout lose some of their caution during the stonefly, or salmon fly hatch as it's sometimes called, and many widely traveled anglers come from other countries and from all parts of the United States to enjoy the sport.

Indian summer in the Big Sky Country is my favorite time there. The usual equinoctial storms of autumn come in late September, followed by a period of comfortably warm days spiced with frosty mornings and evenings. The aspens have turned butter yellow on the flanks of mountains that often have a dusting of snow on their peaks, and the air has a wine-like quality to it. Also, the trout are hungry and various hunting seasons have started.

I always had trouble deciding what to do in this invigorating season—should I go trout fishing or hunting? I finally realized the answer is both. Hunt during the chilly mornings and then head for the nearest trout water during the warmer mid-day hours.

As to finding a place to hunt, the public lands administered by BLM are normally open to hunting. The exception is during times of high fire danger or some other emergency situation.

BLM has initiated an unusual program to ensure hunter access while helping ranchers at the same time. Called the S-60 program, for some obsure reason, it consists of cooperative agreements with certain ranchers who have prized livestock grazing on the public lands at the time hunting seasons are starting. The ranchers are concerned that some of their livestock may be hit by stray bullets, or perhaps frightened into some other kind of injury, yet they only lease the forage and cannot post the land we all own. So an agreement is reached between BLM and the individual rancher under which the Bureau will close the land where the rancher's livestock is grazing, and the rancher opens up a like acreage of his private land to public hunting. It's a cooperative program that has worked well in eastern Montana.

And through another cooperative effort, BLM has helped provide developed access to prime fishing waters in Montana. Most of the State's original settlers preferred river bottom land for the additional shelter from winter storms and because they needed the water to irrigate their fields. As a consequence, much of the stream frontage is privately owned. Most ranchers of my acquaintance were reasonable when asked for fishing privileges, but access was never a sure thing. However, there were some scattered tracts of land along these rivers that had remained in Federal ownership under BLM administration.

Through the Recreation and Public Purposes Act, many of these tracts were conveyed to the Montana Fish, Game and Parks Department which then put in roads, parking areas, toilets and picnic tables for anglers and their families.

There are also several BLM recreation sites that have good fishing nearby. Two excellent campgrounds are located along the

This BLM-designated primitive area harbors big trout but heavy currents through much of the canyon dictates stout tackle to land them.

Madison River south of Ennis, providing convenient camping beside one of Montana's great trout streams. Farther downstream, another campground is located at the north end of BLM's Beartrap Canyon Primitive Area. The canyon holds trout of awesome proportions in its heavy, boulder-churned currents and stout tackle is needed to land fish here. The Beartrap is also home to more than a few rattlesnakes, making the fall, when they are less active, a preferred season for this stretch of the Madison.

Even out in the rolling prairies of eastern Montana, good fishing is available. I recall camping one night near a large prairie reservoir, only to be awakened at first light by splashing sounds from the lake. When I got up to investigate, I saw big trout wallowing in the shallows after some kind of insect nymph or crustacian. And I didn't even have a fishing rod along!

So whether it's hunting a majestic elk in a logged-over area near Missoula or stalking an alert and perpetually nervous pronghorn antelope on the rolling prairies around Miles City; casting a big, bushy stonefly imitation to an orgy-bent brown trout in the fast moving currents of the Madison or cranking spinners through a smallmouth bass pool in the Tongue River, the Big Sky State offers much adventure for visiting outdoor enthusiasts. And the latchstring is always out on your eight million acres of public lands there.

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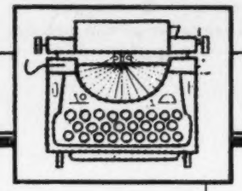

News Highlights

BLM Gains Two National Natural Landmarks

The Secretary of the Interior recently designated two sites in the Roswell, New Mexico, BLM District as National Natural Landmarks (NNLs). The two areas are: Mathers Natural Area, comprising 241 acres believed to contain the best remaining undisturbed example of the shinnery oak-sand prairie community in the Southern Great Plains; and the Mescalero Sands South Dune, comprising 3,208 acres believed to contain the best example of an active sand dune system in the Southern Great Plains. NNL designations, totaling 543 nationwide for all agencies and 42 for BLM, are the Department's means for officially identifying and encouraging the preservation of nationally significant examples of the full range of ecological and geological features that constitute the Nation's heritage. Designation does not formally affect the ownership or management of the areas.

Businessmen Pay for Unauthorized Mining

Four Tuscaloosa businessmen were required to reimburse the United States for Federally-owned coal they mined without authorization in 1975. A Federal judge in U.S. District Court in Birmingham ruled that Lloyd Wood and John Plott, officers of the Lloyd Wood Coal Co., along with Jack H. McGuire and William McGuire, would have to pay the Government $22,384 for 763 tons of Federally-owned coal they mined under surface owned by the McGuire family in northern Tuscaloosa County, Alabama. The funds were received by the U.S. by May 19. In criminal charges surrounding the case, The McGuire brothers pleaded no contest and were adjudged guilty in August 1980 of coal depredation, were fined $1,000, and given one year of supervised probation.

BLM and Counties Cooperate

There is a new era of cooperation between BLM and counties. In fiscal year 1981, the Bureau entered into a cooperative project with the National Association of Counties to identify examples of effective cooperative efforts and to provide to both county officials and BLM managers, ideas and methods for improving relations with each other.

Bureau offices in Oregon have been particularly active in efforts to work more effectively with counties. A number of memoranda of understanding have been signed between BLM Districts and counties as well as one between the Oregon State Office and the Association of Oregon Counties. These agreements are to stimulate better communication.

Alaska Lands Opened

Almost three million acres of public lands in Alaska have been opened to the public for mining and mineral operations. This is in keeping with the Secretary of the Interior's program to review all public lands administered by BLM to see if implementation of multiple-use management principles can be extended. Specifics can be obtained from the BLM Alaska State Office in Anchorage.

Coal Program Regulations

Final regulations on coal management, exploration and mining operations took effect on August 30, 1982. The new regulations reduce the volume of previous regulations by about 30 percent and are the result of a review of the Federal coal leasing program initiated by Secretary Watt in April, 1981, to carry out the President's directive to eliminate burdensome and unnecessary rules. The rules streamline the process for offering publicly owned coal lands for lease while maintaining strict environmental control. Under the new rules, State Governors will have a more significant role in establishing Interior's coal leasing levels.

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